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DISEASES CAUSED BY BACTERIA AND FUNGI

CHODKOWSKI, A. (1950.) **The bactericidal effect of various disinfectants on *Str. agalactiae* on the skin and in the environment of the cow.**—*Brit. vet. J.* **106.** 181–196. **1247**

Str. agalactiae survived for up to three weeks on the utensils of a cowshed and longer if implanted on to the skin of cows. *In vitro* and *in vivo* on the skin the most effective disinfectants out of a considerable number tested were CTAB (cetyltrimethylammonium bromide) in aqueous solution or in cream, and iodine in 70% alcohol or in 6% KI aqueous solution. Formaldehyde vapours effectively disinfected the utensils in a cowshed if allowed to act for 24 hours.—A. MAYR-HARTING.

MEIGS, E. B., BURKEY, L. A., SANDERS, G. P., ROGOSA, M. & CONVERSE, H. T. (1949.) **The relationship of machine milking to the incidence and severity of mastitis.** —*Tech. Bull. U.S. Dep. Agric.* **992.** 1–51. [Abst. from authors' summary.] **1248**

In a herd of cows that had been on routine-machine milking for several years and among which the incidence of mastitis had become very high, experiments were conducted to determine the effect of different methods of milking on its incidence. Tests included determination of leucocytes and of *Streptococcus agalactiae* and other causal, infective bacteria, percentage of chlorides and use of strip-cup. Twenty-five cows were studied periodically on 4 different methods of milking, routine-machine milking, severe-machine milking, mild-machine milking, and hand milking. The incidence of mastitis, decrease in milk yield resulting therefrom, and accompanying changes in characteristics of the milk were in general proportional to the amount of vacuum in the machine and the length of time it was left working on the udder. Considerable improvement resulted when cows with mastitis were changed from routine- or severe- to mild-machine milking; and particularly marked improvement or almost complete recovery resulted in most of the cows when they were changed to hand milking. Numerous cases of mastitis were observed in which *S. agalactiae* was absent from the milk although other indications of injury were evident. The milk from apparently normal cows frequently contained several thousand of this organism per ml. without other evidence of udder injury.

RAZZA, F. & BATTAGLIA, C. (1950.) La mastite streptococcica. (Etiologia, patogenesi, diagnosi e terapia). **[Bovine streptococcal mastitis. Aetiology, pathogenesis, diagnosis and therapy.]**—*Riv. Med. Vet. Zootec.* **2.** 33–34. **1249**

A general summary of the position. No new material.—G. P. MARSHALL.

MIRES, M. H. (1950.) **Nitrofurazone—a practical antibacterial agent for bovine mastitis.**—*J. Amer. vet. med. Ass.* **117.** 49–51. **1250**

5-Nitro-2-furaldehyde semicarbazone was found to be effective *in vitro* against *Streptococcus agalactiae*, *Str. uberis*, *Staphylococcus aureus hemolyticus* and coliform bacteria at dilutions from 1 : 20,000 to 1 : 100,000. Using a 0·2% solution in a mixture of water and polyethylene glycols, at a dose rate of 25 ml. per quarter, in the treatment of clinical mastitis in over 10,000 cows, 78% of acute cases and 90% of dry cows with a history of mastitis during their previous lactating period were considered cured with respect to clinical symptoms, appearance of milk and the results of the bromthymol blue test. The technique of administration and advantages of its use in the field are discussed.

—R. FRIEDMANN.

HARTMAN, T. L., HOES, J. S. & CARY, W. (1949.) **The occurrence of a Type Five sulfadiazine-resistant hemolytic streptococcus.**—*J. Pediat.* **34.** 331–337. [Abst. in *Bull. Hyg., Lond.* **25.** 191. (1950), copied *verbatim*. Signed: R. E. O. WILLIAMS.] **1251**

Of 96 strains of *Str. pyogenes* isolated from infective lesions in hospital patients in Coopersville, N.Y., which had experienced in 1946 a small epidemic of infection with a sulphonamide-resistant Type 19 strain, only two proved to be resistant to 5 mgm. per 100 ml. sulphadiazine. Both the resistant strains were Type 5. No Type 19 strain was encountered.

HOUSEWRIGHT, R. D. & THORNE, C. B. (1950.) **Synthesis of glutamic acid and glutamyl polypeptide by** *Bacillus anthracis*.—*J. Bact.* **60.** 89–100. [Author's summary slightly modified.] **1252**

Bacillus anthracis has been shown to produce an active transaminase that catalyzes the synthesis of glutamic acid from aspartic acid and α-ketoglutaric acid. Only the L-form of aspartic acid was active and the resulting glutamic acid was the L-form. The enzyme was obtained in cell-free extracts by treating cells in a sonic oscillator. It was purified further and obtained in dry form by $(NH_4)_2SO_4$ precipitation followed by lyophilization. The pH optimum for transaminase in sonic extracts was 7·3 to 7·5. The enzyme was most stable at pH 8·5 to 9·0. Filtrates of cultures grown in nutrient broth with yeast extract contained the enzyme, but little or no transaminase activity was present in filtrates of cultures grown in a synthetic medium. No glutamyl polypeptide was synthesized by intact cells or cell-free extracts under the conditions of these experiments.

LANG, K. (1950.) Multiple Leberblutungen bei der Tuberkulose des Rindes. (Peliosis hepatis.) **[Haemorrhage of the liver in tuberculosis of cattle.]**—*Berl. Münch. tierärztl. Wschr.* No. 7. pp. 127–131. **1253**

Miliary tuberculosis in cattle leads to multiple haemorrhages in the liver which mostly remain of microscopic size. Their cause, as suggested by the author, is over-activity of the endothelial cells of the liver when the spleen has become unable to deal with the numbers of damaged erythrocytes. The endothelial cells of the liver which have taken up erythrocytes move into the blood-stream and leave a defect in the capillary wall resulting in a minute haemorrhage. Whether or not these haemorrhages become larger depends on local mechanical conditions.

—A. MAYR-HARTING.

TEUCHNER K. (1950.) Über Gehirntuberkulose beim Rind. **[Tuberculosis of the brain in cattle.]**—*Schweiz. Arch. Tierheilk.* **92.** 23–42. **1254**

Six detailed case reports are given, in which the diagnosis was confirmed clinically, pathologically and histologically. It is concluded that none of the clinical signs: opisthotonos, ataxia, blindness, etc. are pathognomonic. Age, positive tuberculin test, positive pulmonary findings, and characteristic cerebrospinal fluid are useful diagnostic aids. The basal pia mater is a common site of affection. Histologically, an exudative and a proliferative form can be recognized.

—W. R. BETT.

DALLING, T. (1949.) **The control of bovine tuberculosis.**—*F.A.O. Agric. Studies.* No. 10. pp. 64–79. **1255**

Control of bovine TB. rests largely on the diagnosis of infected animals by means of tuberculin testing. This is complicated because of the different agents which cause cattle to become sensitized to tuberculin. These include avian type TB., Johne's disease, human type TB., and so-called "skin-TB." In Great Britain both mammalian and avian types of tuberculin are now in use and both are purified protein derivatives (P.P.D.). In Great Britain practically all tuberculin testing is done by the intradermal method. For best results, the mammalian tuberculin should contain about four times the amount of P.P.D. present in the avian, 3·0 mg. of the former and 0·8 mg. of the latter being used for the single intradermal comparative test. Readings are made 72 hours after injections. The comparative tests, using separate injections of both types of tuberculin, is used as a herd test, rather than as a test for individual animals, to eliminate the possibilities that positive reactions might result from injection and consequent sensitization with avian type organisms.

In Great Britain there is little evidence of the presence of infection in cattle with *M. tuberculosis* of the human type.

BCG vaccine produces a resistance to bovine type TB. in cattle, although it may not be absolute. A short description is given of the method of preparation of mammalian type P.P.D. tuberculin.—W. R. BETT.

NAVRÁTIL, A. (1948.) Tuberkulosa domácích zvířat ve vztahu k zdraví venkova. **[Tuberculosis in farm animals in relation to rural sanitary conditions.]**—*Čas. československ. Vet.* **3.** 277–279. **1256**

In tuberculin tests carried out on cattle in 1947 in several rural districts the number of positive reactors varied from 9·25–39·25%. Plans of the Czechoslovak ministry of health for the eradication of the disease include testing of the entire cattle population and payment of compensation to owners in respect of infected animals that have to be slaughtered.—E. G.

GORET, P. (1949.) Sur la tuberculose bovine d'origine humaine. **[Infection of cattle with human type tubercle bacilli.]**—*Maroc méd.* **28.** 507–509. **1257**

Infection of cattle with human type tubercle bacilli is described.—W. R. BETT.

RUYS, A. C. (1950.) **Bovine tuberculosis in man in Amsterdam before, during, and after the war.** —*Acta tuberc. scand.* **29.** 177–181. [In English. Abst. from author's summary.] **1258**

Pasteurization of milk for human consumption in Amsterdam was made compulsory in 1940. Infection with bovine type tubercle bacilli became less frequent than before the war and has remained so and the incidence of TB. in children has diminished.

PIWOWARCZYK, S. (1950.) Próby diagnozowania gruźlicy u psów na podstawie hodowli na pożywkach jajowych z równoczesnym określaniem typu prątka gruźliczego. **[TB. diagnosis in dogs by culture on egg media. Differentiation of types of** *Mycobacterium tuberculosis*.**].**—*Med. weteryn.* **6.** 216–218. [English and Russian summaries. Abst. from English summary.] **1259**

Samples from 39 dogs suspected to be infected with TB. were inoculated into Petragnani and Loewenstein's media. A positive result was obtained in 37 cases and it was possible to detect growth in 5–7 days. It is concluded that this method is more rapid and economical than the g. pig test. Typing of the growths proved 32 strains to be of human type, 4 of bovine type and 1 atypical.—G. V. LAUGIER.

STANDGAARD, E. (1950.) **Intermittent excretion of bacilli in pulmonary tuberculosis.**—*Acta tuberc. scand.* **29.** 269–276. [In English. Abst. from author's summary.] **1260**

The excretion of tubercle bacilli was intermittent in 52, (12·9%) of 404 patients under treatment in a sanatorium during the two-year period for active pulmonary TB.

In cases with unquestionable cavitation and previous positive bacillary findings it may sometimes be impossible to demonstrate the presence of tubercle bacilli even for a period of several months in spite of energetic search. In deciding about the infectivity of a given case this phenomenon must be given consideration.

ANON. (1950.) **Current status of the chemotherapy of tuberculosis in man. A summary report.**—*J. Amer. med. Ass.* **142.** 650–653. [Abst. from summary.] **1261**

In work during the past two and a half years, on the use of streptomycin the importance of combining surgical procedures with chemotherapy has been recognized; the incidence of toxic manifestations has been decidedly reduced by the use of daily doses of 1·0 g. or less; the development of resistant micro-organisms has apparently been delayed and its incidence reduced by the concomitant administration of para-aminosalicylic acid.

Much remains to be done. The incidence of toxicity and resistance has been reduced, but neither one has been abolished; nothing is known of the optimum dose of para-aminosalicylic acid, and the most effective regimens for the various types of tuberculosis require further research, for it is almost certain that the conception of a single optimum regimen—which has been employed in this study—is faulty. Streptomycin is not a "cure" for tuberculosis, but some progress has been made along a good road in its study. An organization has been developed which can be directed promptly and with some precision to an investigation of the newer means of chemotherapy which are certain to develop.

LAGERGREN, B. & FRISK, A. R. (1948.) **Evaluation of Dubos' medium in routine diagnostic examination of tubercle bacilli from pathologic material.**—*Acta med. scand.* **132.** 189–197. [In English. Abst. from author's summary.] **1262**

Dubos' liquid medium, Löwenstein's medium and g. pig inoculation were used in the routine examination of 1,379 specimens; 436 of the specimens were positive.

The authors conclude that Dubos' liquid medium is of great value but not ideal for the purpose. A solid medium containing the same nutrient solution offers greater advantages.

KARLSON, A. G., GAINER, J. H. & FELDMAN, W. H. (1950.) **The effect of dihydrostreptomycin-para-aminosalicylate (DHS-PAS) on experimental tuberculosis in guinea pigs.**—*Amer. Rev. Tuberc.* **62.** 149–155. **1263**

The therapeutic effect of a salt of dihydrostreptomycin and *p*-aminosalicylic acid containing 59% DHS, 41% PAS was compared with that of an equivalent amount of DHS. G. pigs inoculated subcutaneously with TB. culture were divided into eight groups, one serving as control, the other groups being treated daily with dihydrostreptomycin or dihydrostreptomycin salicylate or the sodium salt of *p*-aminosalicylic acid, equivalent doses being given.

Observations P.M., confirmed by histopathological examination indicated that DHS-PAS treatment is equal, but not superior to DHS

alone in its effect on experimental TB. PAS (in doses as large as 100 mg.) resulted in only a partial regression of the disease.—J. M. JACOBS.

KNIGHT, D. & TOMPSETT, R. (1950.) **Relationship of type of growth of *M. tuberculosis* to antituberculous activity of subtilin.**—*Proc. Soc. exp. Biol., N.Y.* **73.** 55–60. **1264**

An investigation of the antibacterial action of subtilin revealed that although it was active against the tubercle bacillus *in vitro* it failed to influence the course of tuberculous infections in experimental animals. Further study of this *in vitro* inhibition showed that it occurred only when the medium contained Tween 80 a substance that allowed the diffuse growth of the tubercle bacilli. In the absence of this substance the bacilli grew in clumps and were protected from the action of subtilin. Serum was antagonistic to the action of Tween 80 so that clumped growth resulted and subtilin was without antibacterial action. The antibacterial activity of serum from a rabbit inoculated with subtilin was tested against the tubercle bacillus, streptococci, and staphylococci. The serum had no effect on the tubercle bacillus unless sufficient Tween 80 was added to counteract the serum and allow a diffuse type of growth when its antibacterial activity paralleled the activity exhibited against the streptococci and staphylococci.

—JAMES H. HALE.

BARIETY, M. & BROCARD, H. (1949.) Les relations entre l'allergie et l'immunité dans la tuberculose. [**Allergy and immunity in tuberculosis.**]—*Cah. Méd. vét.* **18.** 107–108. **1265**

The authors stated that when a virulent organism is injected into an animal, allergy persists with some fluctuation until death. If, however, a g. pig is injected with an attenuated culture the state of allergy disappears with the death of the bacillus. The recall phenomenon in vaccinated animals was also discussed; further introduction to the micro-organism redevelops the waning allergy immediately. The authors postulated that on this basis allergy and immunity can be dissociated. They also associated the role of hypersensitivity with that of immunity.—W. R. KERR.

BØE, J. (1948.) **Variations in the virulence of BCG.**—*Acta tuberc. scand.* **22.** 125–133. [In English. Author's summary copied *verbatim.*] **1266**

Calmette regarded cultivation on a substratum containing bile as a necessary prerequisite to maintain the virulence of BCG at the proper level. Others have found that cultivation on a medium containing bile increases virulence.

The author examined four different strains of BCG which had been cultivated differently for many years. It was found that the virulence of these strains was rather uniform, regardless of whether they had been cultivated exclusively on bile potato for years, on bile potato and glycerine potato alternately, or exclusively on sauton.

It is probable, at least for some BCG strains, that it is immaterial whether they are kept on bile media or not.

The sometimes large differences in virulence which are described are probably due not so much to the virulence of the BCG strain itself as to the growth conditions in the culture which is selected for the vaccine and to the growth rate of the culture which is used as vaccine.

The significance of a standardized technique is emphasized. The desirability of an international BCG standard and of a more lasting vaccine are also pointed out. Preliminary experiments with freeze-drying give promise of a basis for the latter.

VAN DEINSE, F., SEYS, R. & MACHOLDA, F. (1950.) La taille des germes composant le vaccin BCG d'après le milieu d'entretien; son importance pour le dosage du vaccin. [**The size of the organisms in BCG vaccine in relation to dosage.**]—*Ann. Inst. Pasteur.* **78.** 596–601. **1267**

The average length of bacilli, cultured on potato—or Sauton's—medium, in the first or second passage, is 2·77 μ Bacilli of a normal culture in their second passage on Sauton-medium, aged eight days, do not exceed 2·218 μ, and aged three weeks, when ready for vaccine preparation, they attain an average length of 2·836 μ. On culturing BCG by serial passages every eight days on Sauton's medium, the average size is 2·236 μ—the same as when the culture is allowed to age. Fifteen-day passages produce a size of 2·28 μ. Thus, after a certain number of passages on Sauton's medium the organisms remain small. The authors compared the bacilli composing the Danish vaccine with those of the French one. A BCG vaccine, 0·1 mg. dosage, and composed of bacilli measuring 3·114 μ, does not possess the same activity as a vaccine with the same concentration, but with bacilli measuring 2·105 μ. Examined under the electron microscope, the Danish bacilli were only two thirds of the size of the French ones. Supposing that the bacilli possess the same virulence and vitality, it is obvious that a Danish BCG vaccine, 0·1 mg. dosage, is equivalent to a French vaccine, 0·3 mg. dosage.—W. R. BETT.

BOQUET, A. (1947.) Sur la spécificité de la tuberculine des bacilles tuberculeux aviaires. **[The specificity of avian type tuberculin.]**—*Bull. Acad. Méd. Paris.* **131.** 219–221. **1268**

B. concludes that the avian and mammalian types of tubercle bacilli possess common antigen groups, capable of provoking allergic reactions in g. pigs infected with one or other of these bacilli, and specific antigen groups, manifesting themselves in an activity 25–50 times greater than that of one or other of the two types of tuberculin when injected intradermally into g. pigs infected with the corresponding type bacilli.—W. R. BETT.

LARSEN, A. B., GROTH, A. H. & JOHNSON, H. W. (1950.) **Allergic response to johnin and tuberculin of various skin regions of cattle.**—*Amer. J. vet. Res.* **11.** 301–303. **1269**

The allergic reaction to johnin applied intradermally in the regions of the neck, back and sides and in the caudal fold was tested in five 18-month-old steers which had been sensitized by intraperitioneal injections of 1 g. of heat—killed *Mycobact. johnei.* A sixth steer, sensitized similarly with bovine type *Mycobact. tuberculosis* was tested with tuberculin. Johnin and Tuberculin were used in dilutions of 1 : 100, 1 : 133, 1 : 1,000 and 1 : 1,333. Paired 0·2 ml. doses of each dilution were injected into each region with the exception of the caudal fold where only the 1 : 100 and 1 : 1,000 dilutions were used. Altogether 66 injections per animal were given. Reactions in the caudal fold averaged 2·85 mm. in diameter and in the neck region 6·98 mm. These results, which were similar in both johnin and tuberculin tests, would indicate that the neck region is the most suitable site for this kind of test because of its sensitivity. —E. G.

BAISDEN, M. S., JOHNSON, H. W. & LARSEN, A. B. (1950.) **Studies on johnin. VIII. Preliminary studies on the specificites of acid-fast allergens.** —*Amer. J. Vet. Res.* **11.** 382–387. [Authors' summary copied *verbatim.*] **1270**

The main points of interest to be derived from these intradermal tests of treated acid-fast allergens on artificially sensitized cows are as follows: The specificity of Bureau of Animal Industry (BAI) intradermal johnins was apparently increased, though not significantly, in 12 of 16 experiments by precipitation with protein precipitants. The increases appeared to be real but were not statistically significant because of the techniques used in testing. The consistency of the results indicates that the treatment furnishes a lead for further work. Along with other evidence, the results obtained in fractionating BAI intradermal johnin and tuberculin with ethyl alcohol emphasized differences in the allergens. A fraction of johnin possessing increased specificity was precipitated by 67·5% alcohol, while the fractions precipitated by higher concentrations possessed reduced specificities. The reverse was true with tuberculin, the concentrations greater than 87·5% alcohol producing the precipitates of increased specificity. The reducing agents, sodium thiosulfate, sodium hydrosulfite, and sodium bisulfite increased the specificity of a silico-tungstic acid precipitate of BAI human tuberculin—in two cases significantly. Pepsin produced significant decreases in the specificity of an acetone precipitate of tuberculin, but did not affect that of a similar precipitate of johnin. Trypsin decreased the specificities of precipitates of both tuberculin and johnin significantly.

GLEDHILL, A. W. (1950.) **Imunization against *Erysipelothrix rhusiopathiae* with killed vaccine.** [Correspondence.] — *Nature, Lond.* **166.** 952. **1271**

The author confirms Traub's finding (1947) that only certain strains are of value for vaccine production. By filtering certain virulent strains through "gradocol" membranes of porosity 0·8 μ or 0·75 μ it was found that certain cells would pass through. Growths from such filter passing cells yielded vaccines of higher potency than those from the original unfiltered culture. G. now considers that soluble antigen is not present in cultures yielding efficient vaccines. The difficulty of ensuring that *E. rhusiopathiae* culture filtrates do not contain viable organisms is emphasized.—D. LUKE.

JELLISON, W. L. & KOHLS, G. M. (1950.) **Persistence of agglutinins against *Pasteurella tularensis* in serums of naturally infected sheep.** —*J. Amer. vet. med. Ass.* **117.** 405–408. **1272**

Tularaemia is probably a fairly common disease of sheep on the western ranges of the U.S.A., but receives little attention unless it reaches epizootic proportions. The authors describe the results of agglutination tests on the serum of affected sheep and sheep that had recovered in an outbreak, with a mortality of about 10% in a flock of about 500 ewes and lambs in Idaho. *Brucella tularensis* was isolated from a sick lamb and the serum of six affected animals gave titres ranging from 1 : 640 to 1 : 5,120. Five and seven months after the outbreak agglutinins were still present in 15–20% of the surviving lambs and ewes in titres up to 1 : 320. The incidence of positive reactors was

higher among those animals which had been clinically affected and had recovered than in the flock as a whole.

In order to exclude the possibility that infection with *Br. abortus* might confuse the results, agglutination tests with both organisms were carried out on the serum of 82 sheep. Only one animal gave a definite positive reaction with *Br. abortus* at a titre of 1 : 25.

A table summarizes the outbreaks of tularaemia in sheep in Idaho and Montana since the first outbreak was described in 1919. The disease has been associated with heavy infestations with wood ticks, *Dermacentor andersoni*. Spraying with an insecticide containing benzene hexachloride and D.D.T. and removal of the flock to clean pasture was effective in cutting short the outbreak recorded here.—E. G. WHITE.

HABERSANG. (1950.) Über die Pathogenität des Bacillus proteus vulgaris beim Rind. [**Pathogenicity of *Proteus vulgaris* for cattle.**]—*Mh. Vet.-med.* **5.** 258–259. **1273**

H. deplores the lack of attention paid in Germany to *Proteus vulgaris* as a pathogen, in the textbooks, in legislation dealing with meat inspection, and in the literature.

H. cites five cases (2 cows and 3 calves) in which the organism was isolated from material taken immediately after slaughter. He states that the organism should be regarded as potentially responsible for meat poisoning.

—G. P. MARSHALL.

FIELD, H. I. (1949.) *Salmonella* **infection in cattle.**—*Vet. Rec.* **61.** 109–112. **1274**

Salmonella dublin may be found in meat from infected cattle. Milk may become infected through the bloodstream in animals that are clinically ill with bacteraemia, or through faecal contamination in carriers. Hygienic milk production and adequate examination of emergency-slaughtered animals minimize the risk of food poisoning from this source.—A. MAYR-HARTING.

LEVI, M. L. (1949.) *Salmonella dublin* **infection of young goats.**—*Vet. Rec.* **61.** 555–557. **1275**

Eighteen young goats developed a disease closely resembling salmonellosis in calves, and ten died. *Salmonella dublin* was recovered from the faeces of all the goats, and from the blood and organs of those that died. Unlike calves, the young goats produced O-agglutinins which, however, tended to disappear quickly. In subsequent experimental work it was shown that young goats were very susceptible to artificial infection and to infection from close contact with infected animals.—A. MAYR-HARTING.

UGORSKI, L. (1950.) Zakażenie pałeczką gärtnera u lisów srebrzystych. [*Salmonella enteritidis* **infection in silver foxes.**]—*Med. weteryn.* **6.** 218–219. **1276**

An account of *S. enteritidis* infection in silver foxes on a fox farm. The carcass of a 7-week-old calf that had died suddenly had been used for feeding the foxes. It was found that the calf had died from this infection, and this was considered to be the source of the infection in the foxes.—JOHN R. MITCHELL.

BURR, W. E., DONDERO, N. C. & JUNGHERR, E.L. (1948.) **Experiences in the isolation of** *Salmonella pullorum* **from serologic reactors.**—*Proc. 20th Ann. Meet. N.E. Conf. Lab. Wkrs Pullorum Dis. Contr.*, June 8th, 9th & 10th. pp. 14–16. [Mimeographed.] **1277**

Of 701 fowls which were positive reactors to the standard tube agglutination test, 125 (17·8%) yielded cultures of *S. pullorum* and 6 (0·9%) cultures of *S. gallinarum* on bacteriological examination.—D. LUKE.

MEYER-HELMSTEDT, F. (1950.) Umfangreiche bakterielle Lebensmittelvergiftung nach Genuss von weicher Mettwurst, verursacht durch Breslau-Bakterien-Träger. [**Food poisoning caused by** *Salmonella breslau.*]—*Lebensm Tierarzt.* **1.** 116–118. **1278**

An outbreak of food-poisoning, caused by *S. typhi-murium* in sausage spread, which affected 150 people is described. The butcher's apprentice who had had gastro-enteritis three weeks previously, and two other employees, were found to be excreting the organisms and so contaminating the originally sound meat that had gone into the spread.—A. MAYR-HARTING.

WIEDMAN, G. P. & PALEY, S. S. (1950.) **Chloromycetin treatment of typhoid fever. Report of two cases.**—*Amer. J. med. Sci.* **220.** 389–392. [Abst. from authors' summary.] **1279**

Two cases of acute typhoid fever treated with chloromycetin were described. Rapid lysis of fever in 3 to 4 days, and corresponding subsidence in the toxic condition were observed. Chloromycetin therapy was maintained for 22 days and 21 days, respectively; in 1 case cultures from faeces remained positive until the sixth day after which all blood and faecal cultures remained negative for *Salmonella typhi*.

DIENES, L., WEINBERGER, H. J. & MADOFF, S. (1950.) **The transformation of typhoid bacilli into L forms under various conditions.**—*J. Bact.* **59.** 755–764. [Authors' summary copied *verbatim.*] **1280**

Freshly isolated strains of *Salmonella typhosa* produce L type colonies abundantly on

soft horse serum agar plates containing high concentrations of penicillin. The L type colonies grow well with the highest concentration of penicillin tested, 10,000 units per ml of the media. Carboxylmethoxylamine and glycine induce a similar transformation but only in a narrow range of concentration. The L forms are only slightly more resistant to these agents than the bacteria. L forms start to develop from bacteria exposed to aureomycin and chloramphenicol, but their growth is arrested in the initial stages. The resistance of the L forms and of the bacteria to these antibiotics is about the same. The L forms are more sensitive to acriflavine and crystal violet than are the bacteria. L forms were obtained from typhoid bacilli that survived exposure to specific antibody and complement. Bacilli lysed with bacteriophage did not develop into L forms, but those that survived in lysed cultures were occasionally transformed into these forms. Sublethal injuries of various types induced transformation into L forms, and the development of the latter depends largely upon whether they are more or less susceptible than the bacteria to the particular injury. Certain of the injuries producing the L transformation are encountered by the bacteria in their natural environment suggesting that this phenomenon may occur in the natural life of bacteria.

STABLEFORTH, A. W. (1949.) *Br. abortus*: **virulence tests and immunization with living, killed and fraction vaccines.**—*Proc. 4th Internat. Congr. Microbiol.* **1947.** pp. 236–237. **1281**

The immunization results with living and with dead vaccines, consisting of varying numbers of organisms, of varying virulence, and applied by various routes, are recorded. The most reliable estimates of virulence are obtained by spleen counts of g. pigs killed at intervals after inoculation of a given dose.

—A. MAYR-HARTING.

TAYLOR, A. W. & MCDIARMID, A. (1949.) **The stability of the avirulent characters of *Brucella abortus*, strain 19 and strain 45/20 in lactating and pregnant cows.** — *Vet. Rec.* **61.** 317–318. **1282**

Of 28 non-pregnant lactating cows, eight were vaccinated with strain 19 vaccine, eight were vaccinated with strain 45/20 vaccine and 12 were not vaccinated but were kept in contact with the vaccinated animals. The cattle were bred. Milk samples taken prior to parturition and colostrum, cotyledons or cervical swabs taken at parturition were examined for presence of *Brucella*. No evidence was obtained of the excretion of *Br. abortus* from lactating cattle vaccinated with strains 19 or 45/20 or from the in-contact control animals.

In another experiment each strain was inoculated intravenously into a pregnant cow in a dose sufficient to produce abortion. The organisms were recovered in culture and inoculated into another pregnant cow. Both strains 19 and 45/20 were passaged in this manner seven times. After each passage cultures were inoculated into g. pigs in order to assess their virulence and were examined for any change in their cultural characteristics. Strain 19 retained its ability to grow in air, its relative avirulence for g. pigs, its smooth colonial appearance and its specific reaction to the thionine blue test. Strain 45/20 became a highly virulent CO_2 sensitive strain by the seventh passage. Its "R" character and inability to produce agglutinins in the g. pig were lost between the second and third passage. Sensitivity to CO_2 returned gradually after the third passage. After the fourth passage strain 45/20 caused marked splenic enlargement, stimulated agglutinins in high titre and persisted in splenic tissue for 15 weeks after inoculation.—L. M. JONES.

GREEN, T. W. & STEIN, L. (1950.) **Failures with aureomycin in the treatment of infection with *Brucella suis*.**—*J. Amer. med. Ass.* **144.** 380–382. [Authors' summary copied *verbatim*.] **1283**

Three patients with acute brucellosis were treated with large amounts of aureomycin. Initial treatment with 104 Gm. of aureomycin hydrochloride in 1 patient and with 40 Gm. in another did not prevent clinical relapses with bacteremia. The third patient was also considered to be a therapeutic failure because of persistence of fever and symptoms for months after treatment with aureomycin.

Further critical and well controlled clinical studies must be made before the exact value of aureomycin in the treatment of human brucellosis can be determined.

REEBSTEIN, H. (1950.) Über 42 Fälle von Tularämie der typhösen Verlaufsform. [**A typhoid-like form of tularaemia in 42 prisoners of war in Russia.**]—*Z. Tropen. Parasitol.* **2.** 199–206. [Abst. from English summary.] **1284**

During the late summer of 1948 in an epidemic of tularemia in Russia, rodents were the first victims; 42 human cases occurred in a prisoner-of-war camp. The clinical nature of the illness is described.

CASTAÑEDA, M. R. (1949.) **A short note on *Brucella* fractionation.**—*Puerto Rico J. publ. Hlth.* **25.** 72–77. [In English and Spanish.] [Abst. in *Bull. Hyg., Lond.* **25.** 310. (1950), copied *verbatim.* Signed: R. LOVELL.] **1285**

A substance soluble in saline may be obtained by grinding a thick suspension of *Brucella* in a ball mill, collecting it in 0·2% formalinized saline and clarifying by centrifugation. A stock solution of equal parts, according to their nitrogen content, of extracts of *Brucella abortus, melitensis* and *suis* is prepared; this is diluted with 0·5% phenol saline until a nitrogen content of 0·0022 mgm. % is obtained. When diluted 10 times this should elicit a delayed cutaneous reaction when inoculated intradermally into g. pigs infected with *Br. abortus.*

A substance soluble in olive oil is obtained by treatment of suspensions of *Brucella* with ether-alcohol or acetone and subsequently mixed with an equal part of chloroform. After evaporation and solution in olive oil this substance is suitable for injection. When given intradermally, subcutaneously or intratesticularly, necrotic lesions are produced which vary in intensity according to the dose.

There is a similarity between this and acid-resistant substances from the tubercle bacillus and the author considers that this may account for the similarity of lesions and symptoms in tuberculosis and *Brucella infection.*

GERHARDT, P., TUCKER, A. L. & WILSON, J. B. (1950.) **The nutrition of brucellae: utilization of single amino acids for growth.**—*J. Bact.* **59.** 777–782. [Authors' summary copied *verbatim.*] **1286**

Of a number of amino acids and related nitrogen compounds surveyed, L- or DL-glutamic acid, L- or DL-(but not D-)asparagine, and L-histidine supported good growth of *Brucella abortus*, strain 19, when supplied singly as the nitrogen source in a chemically defined medium. Apparently, L- or DL-alanine and L-arginine were utilized to a lesser degree.

Two CO_2-requiring strains of *Brucella abortus* were cultivated in the chemically defined medium (with a 10 per cent CO_2 atmosphere) when L-glutamic acid was supplied as the nitrogen source.

It was demonstrated that *Brucella abortus*, strain 19, could be cultivated in a simple medium containing only mineral salts, accessory factors, and L-glutamic acid as the nitrogen, carbon, and energy source. L-alanine could partially replace glutamic acid in this respect.

DOYLE, L. P. (1948.) **The etiology of swine dysentry.**—*Amer. J. vet. Res.* **9.** 50–51. **1287**

The *Vibrio* isolated by D. in 1943 [*V.B.* **15.** 140] from pigs with dysentery was, at that time, difficult to cultivate on artificial media. Since then it has been propagated quite regularly by making subcultures at intervals of about 48 hours on blood agar. Typical dysentery developed after an incubation period of at least 27 days in 50 out of 60 pigs which were fed with pure cultures of the organisms mixed with gastric mucin. A method for isolation of the organism from infected bowel is described. The cultural characters and morphology of the organism which resembles *Vibrio fetus* rather closely, are described and the name *Vibrio coli* is suggested.

—M. C.

V. BALLMOOS, P. (1950.) Über die Vibrionen-Dysenterie des Schweines. **[Vibrionic dysentery in pigs.]**—*Schweiz. Arch. Tierheilk.* **92.** 154–175. **1288**

As a result of the publication of an article on swine dysentery in the U.S.A. [see preceding abst.] the author made a routine examination of material from pigs at Berne. Of 1,104 such samples examined in a period of eight months, vibrios were present in 380. The symptoms associated with these findings were mild fever, accelerated pulse, inappetence, diarrhoea or constipation, oedema of the head and disturbances of movement. Death often occurred within a few hours.

The findings in 100 P.M. examinations are tabulated. The most constant findings were catarrhal, croupous or haemorrhagic gastro-enteritis with enlargement of the local lymph nodes, myocardial degeneration, and cloudy swelling in the liver and less constantly in the kidney.

The organisms were readily demonstrated in smears of the mucosa of the large intestine from fresh material. Cultures were obtained on sheep blood agar incubated in CO_2.

The highest incidence was in unweaned pigs about three weeks old and in piglets at 3–4 months. Mortality in the former was up to 100%: in older animals it was considerably lower. More cases occurred between November and May, especially during bad weather. The disease is present throughout Switzerland and is especially common in areas where there is intensive pig production.

Attempts to infect rabbits, g. pigs, mice and rats with vibrios isolated from pigs were unsuccessful. Two ten-week-old pigs fed cultures of vibrios on alternate days for 49 days remained healthy except for periodic attacks of diarrhoea. When slaughtered on the 50th day they had the typical lesions in the heart, lymph

nodes and intestines which were found in natural cases of the disease.

Vibrios and the typical pathological changes were demonstrated in 12 of 30 healthy pigs slaughtered at an abattoir. This supports the view that the disease exists in a latent form which may lead to sudden death. It is possible that the disease is related to "cardiac syncope" (Herztod) in pigs.—E. G. WHITE.

AINSWORTH, G. C. (1949.) **List of fungi recorded as pathogenic for man and higher animals in Britain.**—*Trans. Brit. mycol. Soc.* **32.** 318–336. **1289**

This list attempts to fill the gap left by the fact that the census of fungi recorded for Britain taken under the auspices of the British Mycological Society did not include "medical fungi". It is primarily a catalogue of pathogenic species. The literature has been searched to the end of 1947 and a very full bibliography is given. There is a Host Index and a General Index.

—W. R. BETT.

AINSWORTH, G. C. (1949.) **Fungi and fungus diseases.**—*Brit. J. Derm.* **61.** 421–424. **1290**

A plea for improvement of the nomenclature of fungi affecting animals and human beings and of that of the diseases concerned. Examples are given of unsuitable nomenclature and of changes that might be made.—W. R. BETT.

BURKE, R. C. (1950.) **Coccidioidomycosis.**—*Trans. N.Y. Acad. Sci.* **12.** 188–194. [Author's summary slightly modified.] **1291**

The procedure and results of inoculating fertile hens' eggs with *C. immitis* are described. That the use of fertile hens' eggs is an excellent method for obtaining large numbers of sporangia for study is indicated by the massive infections which result and by the large size and rapid reproduction of the sporangia. Sporangia are found throughout the egg: in chick embryo, extra-embryonic membranes, albumen, yolk sac, and particularly in the amniotic and allantoic fluids. The mycelial form sometimes occurs on the air sac membrane.

A comparison of the morphology of the sporangia noted in fertile hens' eggs with those found in human hosts and experimental animals showed a greater variation in size, shape, abnormal variations, and staining reaction in those sporangia grown in fertile hens' eggs.

HEMMERT-HALSWICK, A. (1946.) Zur Pathologie der Lymphangitis epizootica des Pferdes. [*Histoplasma farciminosum* **infection (epizootic lymphangitis) in horses.**] *Berl. Münch. tierärztl. Wschr.* August. pp. 13–15. **1292**

A general account of the lesions in infected horses. No new material.—W. R. BETT.

FOLLMANN, E. (1949.) Zur Kenntnis des Erregers der Lymphangitis epizootica, des Endomyces farciminosus Eberbeck. [**Epizootic lymphangitis in horses.**]—*Dtsch. tierärztl. Wschr.* **56.** 198–201. **1293**

A general account of the cultural and morphological characteristics of *Histoplasma farciminosum*. There is no new material.

—W. R. BETT.

ARTIOLI, D. (1949.) Ulteriore contributo alla conoscenza delle lesioni interne da farcino criptococcico (granuloma polmonare). [**Pulmonary granuloma in** *Histoplasma farciminosum* **infection.**]—*Zooprofilassi.* **4.** 119–126. **1294**

The author reported two cases of lung involvement in *Histoplasma farciminosum* infection in horses. Both animals had typical skin lesions. Internally, lesions were found in the liver, kidneys and lungs in one case, and in the lungs only in the second case. Lung lesions were numerous, discrete and about the size of a hazel nut. Microscopically they took the form of a granuloma, with a typical palisade arrangement of cells around each focus. There was a tendency to involvement of the lymphatic system.

—I. W. JENNINGS.

BOUDERLIQUE, J. (1946.) Contribution à l'étiologie de l'actinomycose mammaire. [**Aetiology of mammary actinomycosis.**] —*Thesis. Alfort.* pp. 65. **1295**

A general account of the subject with a short reference list from French, German and Dutch literature.—W. R. BETT.

LEVI, M. L. & COTCHIN, E. (1950.) *Bacillus actinoides:* **its association with pneumonia in cattle and its relationship to** *Streptobacillus moniliformis.*—*J. comp. Path.* **60.** 17–27. **1296**

Twenty-six lungs of calves with non-tuberculous pneumonia were examined pathologically and bacteriologically. In 14 of these *Actinobacillus actinoides* was found, either alone or with other organisms. The best growth of the *actinobacillus* was obtained on inspissated serum where the organisms grew as flakes in the condensation water. The flakes consisted of wavy filaments with hyaline clubs resembling the globules seen in L-organisms. The clubs could be seen only in wet preparations. Sometimes globular forms were produced as in *Actinomyces muris-ratti* (*Streptobacillus moniliformis*). The pathogenic role of the organisms is not clear.

In one case it was possible to produce bronchopneumonia in a young goat by intratracheal inoculation.—A. MAYR-HARTING.

REINHARD, K. R. (1950.) **Studies on bovine leptospirosis.**—*Thesis, Cornell.* pp. 54. **1297**

A study of two enzootic occurrences of bovine leptospirosis and of six calves inoculated experimentally with organisms isolated from natural cases. R. states that the disease is probably a generalized infection in its initial stage, characterized by leptospiraemia, thermal reaction and a progressive haemolytic anaemia which is probably directly caused by leptospira. The chronic stage is characterized by nephritis. The cause of death in acute cases is not established, but it seems to be a toxaemia or anoxia due to blood destruction, or both.

In the inoculated animals that were six months old, antibodies against leptospira in high concentration were detected in convalescent blood serum by the lysis test. The two animals that were under three months of age did not develop lytic antibodies, but the course of the disease in one was only 12 days.—H. L. GILMAN.

EWY, Z. (1949.) Leptospiroza u psów w Krakowie. **[Leptospira infection in dogs in Cracow.]**—*Med. Weteryn.* **5.** 354–357. **1298**

E. isolated and described the causal organism and believes that infection occurs not only from rats and dogs but also from cattle, pigs, horses and silver foxes, thus constituting a source of infection to man. The highest incidence was noted in September, October and November. Details are given of the syndrome in dogs and of treatment with specific antiserum and also with penicillin.—JOHN R. MITCHELL.

CORRÊA, M. O. A. & MEIRA, J. A. (1949.) Sôbre um caso de febre canicola no homem. **[A human case of canicola fever.]**—Reprinted from *Rev. med.-cirurg. Brazil.* **9.** 185–202. [English summary.] **1299**

An account of the first human case of infection with *Leptospira canicola* in Brazil.

VOGELSANG, E. G. & ESPÍN, J. (1949.) *Bartonella canis* Kikuth, 1928, en caninos de Venezuela. **[*Bartonella canis* infection in dogs in Venezuela.]**—*Rev. Med. vet. Parasit., Caracas.* **8.** 135–136. **1300**

Splenectomy was carried out on a healthy dog. No parasites and no morphological changes were previously present in the blood. On the sixth day after the operation isolated inclusions in the erythrocytes with the general morphology of *Bartonella canis* were present. On the following day these inclusions had become more numerous, and by the eighth day the blood presented evidence of a certain degree of regenerative activity.—G. P. MARSHALL.

See also absts. **1353** (*Str. equi* in equine influenza; **1395** (Group A haemolytic streptococci); **1396** (*Past. tularensis*); **1454–1455** (animal diseases transmissible to man); **1457** (botulism); **1460** ("Mraclin" disease); **1484** (*H. pertussis*); **1525** (*Salmonella* in duck eggs); **1526** (bacterial food poisoning); **1551–1552** (bacterial aerosols); **1562** (report, Lister Institute); **1564–1565** (reports, Canada); **1568** (report, U.S.A.); **1569** (book, microbiology); **1570** (book, leptospiroses).

DISEASES CAUSED BY PROTOZOAN PARASITES

NIŽNÁNSKY, F. (1950.) Žrebčia nákaza v ČSR. **[*Trypanosoma equiperdum* infection in Czechoslovakia.]**—*Čas. československ. Vet.* **5.** 383–398. **1301**

T. equiperdum infection in post-war Czechoslovakia is discussed. It is believed that the disease was introduced by Russian army horses. During 1945–49 the disease was diagnosed clinically in 675 horses, serologically in 138 and clinically and serologically in 409. There were 3,501 suspected cases and 786 horses died. The incubation period varied from 6–21 days. Intratesticular injection of infected blood into rabbits and complement fixation using antigen from intravenously infected dogs were reliable means of diagnosis.

Clinical and laboratory examination and observation of suspected horses, slaughter or castration of infected stallions and artificial insemination contributed to the eradication of the infection.—E. G.

GUYAUX, R. (1948.) Note sur l'épidémiologie des trypanosomiases bovines en milieu d'élevage indigène au Kivu. **[Epidemiology of bovine trypanosomiases in the province of Kivu, Belgian Congo.]**—*Ann. Soc. belge. Méd. trop.* **28.** 345–354. **1302**

An analysis of trypanosomiasis due to *T. vivax* and *T. congolense* between the years 1938–47 showed that the incidence was highest when the herbage was scarce and lowest when the herbage was at its maximum. Tartar emetic combined with arsenical preparations gave the best results in treatment. The raising of stock was possible as long as fewer than 7–8% of the animals were affected.—JAS. G. O'SULLIVAN.

DEOM, J. (1949.) Quelques essais de chimioprophylaxie des trypanosomiases bovines à *T. congolense* et *T. vivax* par la pentamidine. **[Prophylaxis of *Trypanosoma congolense* infection by pentamidine.]**—*Ann. Soc. belge Méd. trop.* **29.** 9–13. [Flemish summary.] **1303**

Pentamidine was given intramuscularly to cattle in the Belgian Congo which were infected experimentally with *Trypanosoma congolense* or *T. vivax*. A single injection of the drug in the form of a 20% solution in methyl acetamide was given at a level of 1–3 ml. per kg. body weight. The cattle were infected by intravenous injections of virulent blood obtained from g. pigs or cattle and containing 1,410,000–230,480,000 parasites. Eighteen cattle were used, of which nine did not receive the drug and served as controls. The area in which the experiments were conducted is said to be free from *Glossina*.

The results with five cattle given *T. congolense* and four given *T. vivax* showed no effect of the drug on the incubation period (2–15 days) whether the drug was given at the same time as the infected blood or at an interval varying from 24 hours to 15 days later. The strains of trypanosome used had not previously been in contact with phenamidine. D. considered that experiments with repeated inoculations of the drug may be worth a trial.—E. G. White.

Vilain. (1949.) La prophylaxie agronomique en A.O.F. [**Sleeping sickness control by the clearing of tsetse fly infested areas in French West Africa.**]—*Bull. Méd. l'Afrique Occidentale Française*. Spéc. pp. 79–85. **1304**

Prophylactic control of sleeping sickness in French West Africa during 1939–49 is discussed and a general description of the methods used in clearing tsetse-infested areas is given. During this period 1,500 tsetse foci and an area of about 100,000 hectares were cleared. Agronomic control proved of little value in forest regions and moist savannah districts. Cultivation of cleared areas was undertaken where possible, in order to make eradication of the fly permanent. —E. G.

Torrealba, J. F. (1949.) Dos casos agudos mas de tripanosomosis rangeli, tripanosomosis de tejera, tercera tripanosomosis humana o tripanosomosis de la region caribiana. [**Two further acute cases of *Trypanosoma rangeli* infection in man.**]—*Rev. Med. vet. Parasit., Caracas*. **8.** 111–113. **1305**

T. reported two more acute cases of *Trypanosoma rangeli* infection in human beings, bringing the total number of cases reported to nine. The patients were two sisters, ten months and seven years of age. Clinical signs were pseudo-myxoedema, macropolyadenitis and low fever of short duration.—I. W. Jennings.

Neghme, A., Román, J. & Sotomayer, R. (1949.) Nuevos datos sobre la enfermedad de Chagas en Chili. [**New data on Chagas' disease in Chile.**]—*Bol. Ofic. sanit. pan-amer.* **28.** 808–817. [Abst. from English summary.] **1306**

The authors present the results of investigations on Chagas' disease in Chile up to June 30, 1948. During systematic epidemiological surveys made of representative sample zones where the disease was endemic, 14,403 persons were examined, and 12% were infected with *T. cruzi*. From the Tarapaca to the O'Higgins provinces, 1,729 proved cases were found: 10,666 complement-fixation tests were made, 14·25% of which were positive. By xenodiagnosis, 10·9% of positive cases were found among 4,006 domestic and wild animals examined. 411 confirmed acute cases were found in the provinces of Santiago and Aconcagua and 124 in the province of Coquimbo, as a result of clinical investigations with special reference to cardiopathy. Prevention of Chagas' disease was attempted by the application of D.D.T. in all the rural zones. The application of 5% D.D.T. in kerosene in 1,132 houses revealed that it was possible to control the breeding of triatoma in 90% of the cases, with a low index of them up to 12 months later. Success was also obtained by the use of gammexane in smoke generators.

The authors mention legislation for the prevention of the disease, as well as bills submitted to congress on rural dwellings and programmes for future clinical investigations.

Torrealba, J. F. (1949.) Otro caso agudo de Chagas. Caso 121. [*Trypanosoma cruzi* **infection (Chagas' disease).**]—*Rev. Med. vet. Parasit., Caracas*. **8.** 115–117. **1307**

This is a short account of an acute case of Chagas' disease in a two-month-old baby. The child had a swollen face, grossly enlarged liver and spleen, macropolyadenitis and papular skin lesions. Blood films revealed 10–12 trypanosomes in each microscopic field. A g. pig inoculated with the blood developed a severe infection.—I. W. Jennings.

Ceccaldi, J., Trinquier, E., Pellissier, A. & Arnoult, H. (1949.) Sur l'emploi du para (2-4-diamino-3-triazinyl-6-) arsino-oxyde par la voie intraveineuse dans le traitement de la trypanosomiase humaine. [**Para (2-4-diamino-3-triazinyl-6-) arseno-oxide given intravenously in human trypanosoma infection.**]—*Bull. Soc. Path. exot.* **42.** 400–407. **1308**

The compound is of value in early peripheral stages of the disease in doses of 0·3 mg. per kg. per day for seven days. In the meningeal-encephalitic stage the effect is only transient. In the discussion following the paper the dose

of 1·5 mg. per kg. for seven days was suggested as suitable for the more intransigent stages.

—MALCOLM WOODBINE.

CURD, F. H. S. & DAVEY, D. G. (1950.) **"Antrycide"—A new trypanocidal drug.**—*Brit. J. Pharmacol.* **5.** 25–32. [Authors' summary slightly modified.] **1309**

An account is given of the work which led to the preparation of "Antrycide". Two salts have featured in the experiments—antrycide chloride, which is only slightly soluble in water, and antrycide methylsulphate, which is freely soluble in water. Absorption of the two salts, after their subcutaneous injection, appears to be directly related to their solubility; a suspension of the chloride is absorbed slowly and a solution of the methylsulphate rapidly. A table is given showing the curative properties of antrycide in mice infected with various species of trypanosomes. The substance is most active against *T. congolense*, *T. evansi*, *T. equinum*, and *T. equiperdum*, but also exhibits marked activity against *T. brucei*, *T. rhodesiense*, and *T. gambiense*. No activity has been detected against *T. cruzi*. Antrycide may be used to protect mice for several weeks against *T. congolense*. Evidence is quoted to show that the prophylactic properties of antrycide are due, for the most part, to the establishment of a reservoir of drug beneath the skin from which absorption takes place slowly, and not to persistence of the drug in the body in the usually accepted sense of the term.

RANQUE, J., RANQUE, M. & CABASSU, H. (1949.) Le thymol test de Maclagan dans les leishmanioses humaines et canines. **[Maclagan's thymol test in canine leishmaniasis.]**—*C. R. Soc. Biol. Paris.* **143.** 1133–1134. **1310**

The Maclagan thymol-turbidity test depends upon the precipitation of a thymol-protein-phospholipoid complex. This takes place on the addition of a saturated solution of thymol buffered at pH 7·8 to certain sera. The reaction may be indicative of derangements of the function of either the liver or the reticulo-endothelial system. A quantitative modification of the test was applied to sera obtained from cases of different protozoan infections.

The turbidity was measured photometrically and the values obtained were divided into four categories:—

Group (1) consisted of eight human cases of visceral leishmaniasis diagnosed by the identification of *L. infantum* in bone marrow. All gave strongly positive results in the thymol test, while only two gave positive formol-gel reactions.

Group (2). Two cases of cutaneous leishmaniasis (Oriental sore) diagnosed by the demonstration of *L. tropica* in skin lesions, gave negative thymol-turbidity reactions.

Group (3) was composed of 30 cases of canine leishmaniasis. Twenty-eight gave positive reactions, one subpositive and one doubtful. The figures obtained were generally lower than in the human cases (1) except where the visceral involvement was more pronounced.

Group (4). Eight rats were infected with a virulent strain of *Trypanosoma brucei* causing death after five days. Their sera gave entirely negative reactions. It is suggested that in these cases the animals died before the reticulo-endothelial system became involved as indicated by histological examination.—L. P. JOYNER.

PELI. (1950.) La découverte de l'agent de la trichomoniase bovine. **[The discovery of the cause of bovine trichomoniasis by Mazzanti in 1900.]**—*Bull. Off. internat. Epiz.* **33.** 348–351. **1311**

The original article by Mazzanti in 1900, published by *J. Roy. Soc. Ital. Vet. Acad.* (*Turin*) is reproduced. M. named the organism *Trichomonas utero-vaginalis*.

—JAS. G. O'SULLIVAN.

RAMON, G. (1950.) La trichomoniase bovine. Sa répartition en Europe et dans le monde. **[Geographical distribution of bovine trichomoniasis.]**—*Bull. Off. internat. Epiz.* **33.** 340–347. **1312**

A review of the incidence is given. The Office International has no figures for Roumania, Czechoslovakia, Yugoslavia or Russia. There are no records of the occurrence of bovine trichomoniasis in Norway, Sweden or Finland.

—JAS. G. O'SULLIVAN.

WILSON, J. G. (1950.) Trichomoniase en Grande-Bretagne. **[Bovine trichomoniasis in Great Britain.]**—*Bull. Off. internat. Epiz.* **33.** 352–358. **1313**

A general review of the symptomatology, microscopic and serological diagnosis, prophylaxis and treatment.—JAS. G. O'SULLIVAN.

BOTO, R. (1950.) La trichomoniase bovine en Espagne. **[Bovine trichomoniasis in Spain.]**—*Bull. Off. internat. Epiz.* **33.** 359–360. **1314**

The condition is next in importance to brucellosis as a cause of abortion. Determined attempts are being made to stamp it out.

—JAS. G. O'SULLIVAN.

BUCK & QUESNEL. (1950.) Premières observations de trichomonoses bovines à Madagascar. **[First record of bovine trichomoniasis in**

Madagascar.]—*Bull. Soc. Path. exot.* **43.** 521–523. **1315**

Trichomonas foetus infections were detected in a herd near Antananarivo. The parasites were first found in the foetal membranes of a foetus aborted at 13 weeks and in preputial washings from the bull. Another heifer served by this bull also aborted at 13 weeks and the parasites were found in the amniotic fluid, buccal cavity and stomach of the foetus. Four other bulls were found to be infected. The parasites were detected by direct microscopic examination and by cultural methods. In the first two cases these techniques failed to reveal the presence of parasites in vaginal secretions after three days and two weeks respectively.

The females were treated by antiseptic lavage using either quinosol 1%, gonacrine 1% or chloramine 5%. Treatment of the bulls with quinosol and gonacrine was ineffective. Following the observations of BARTLETT [*V.B.* **19.** 393] who obtained some success with the injection of iodides, the administration of protistene (containing 55·58% iodine) effected the disappearance of the parasites from preputial washings for at least ten days after treatment. These observations continue.

The control of trichomoniasis in Madagascar is likely to prove difficult since an artificial insemination service would be difficult to administer under the prevailing conditions.

—L. P. JOYNER.

CORRIAS & BASS, E. (1950.) La déviation du complément dans le diagnostic de la trichomoniase bovine. **[The complement-fixation test in diagnosis of bovine trichomoniasis.]**—*Bull. Off. internat. Epiz.* **33.** 402–405. **1316**

The preparation of antigen is described and figures given for 64 blood samples (22 from bulls and 42 from cows). The test is not reliable in infected bulls. In infected cows which had recovered and been successfully served, antibodies were present at least five months after infection.—JAS. G. O'SULLIVAN.

HARDING, H. P. (1950.) **The clinical aspect and diagnosis of trichomoniasis, with particular reference to the bull.**—*Vet. Rec.* **62.** 539–540. **1317**

A detailed description is given of a sheath washing technique for the detection of the motile trichomonad. It is emphasized that there is as yet no satisfactory treatment for the bull.—GEORGE M. URQUHART.

BAREGGI, G. (1950.) Pathogénie de la trichomoniase chez le taureau. **[Pathogenesis of trichomoniasis in the bull.]**—*Bull. Off. internat. Epiz.* **33.** 406–418. **1318**

B. advances some very unorthodox views. He considers that *Trichomonas foetus* can survive for long periods outside the animal body and that many outbreaks have a non-venereal origin. In bulls the organism can behave as a harmless commensal until such time as the sex hormone balance of the bull is upset. Such upset of the sex hormone system is, he says, commonly produced by infection of the bull with brucellosis or tuberculosis; it may also be produced by ligature of the spermatic cord or by castration. He states that in a high proportion of testicles from 40 bulls infected with brucellosis he was able to demonstrate *Trichomonas foetus*.

Trichomoniasis in bulls, it is said, can be diagnosed clinically by reason of the asymmetry and hardening of the testicles and epididymis.

—JAS. G. O'SULLIVAN.

PIERCE, A. E. (1950.) **The host-parasite relationship between the female bovine and** *Trichomonas foetus*.—*Vet. Rec.* **62.** 541. **1319**

This summary is of particular interest to the practitioner, and indicates that post-oestral mucus, pus from a case of pyometra or discharges from pregnant animals, are the best material in which to detect the motile trichomonad, while bluish mucoid vaginal mucus is best for diagnosis by the mucus agglutination test.—GEORGE M. URQUHART.

FLORENT. (1950.) Prophylaxie de la trichomoniase. **[Prevention of bovine trichomoniasis.]**—*Bull. Off. internat. Epiz.* **33.** 419–426. **1320**

F. gave detailed directions regarding measures to be observed in preventing *Trichomonas* infection of cows and bulls (whether privately or publicly owned). He maintains that public authorities should eliminate the contaminated bulls which are being used by many small farmers.—JAS. G. O'SULLIVAN.

NIŽNÁNSKY, F. & KOPPEL, Z. (1948.) Trichomonáza holubov v ČSR. **[Trichomoniasis of pigeons in Czechoslovakia.]**—*Čas. československ. Vet.* **3.** 728–732. **1321**

Literature on trichomoniasis in pigeons is discussed. The authors believe that the infection is fairly common in Czechoslovakia, although it is seldom recognized. The clinical picture and P.M. findings in birds received by the Bratislava veterinary diagnostic institute were uniform in all cases. The age of infected birds ranged from a few weeks to several months. There was heavy breathing, swelling of the neck and a yellowish membrane in the throat. P.M. there

were one or more button-shaped swellings in the throat and the liver was studded with small whitish spots. The parasites were present in large numbers and were identified microscopically as *Trichomonas columbae*. They were successfully cultivated on 10% horse serum broth. As a preventive measure in infected flocks an aqueous solution containing 0·8% hydrochloric acid was given instead of drinking water.—E. G.

CONNELL, R. (1950.) **Enterohepatitis (blackhead) in turkeys. VI. Abnormalities, possibly caused by a stage of *Histomonas meleagridis*, occurring in second stage larvae of blackhead-transmitting *Heterakis gallinae*.**—*Canad. J. comp. Med.* **14.** 331–337. [French summary.] **1322**

Blackhead-free and blackhead-carrying stocks of *Heterakis gallinae* were established and second-stage larvae from each stock were studied. Cuticular swellings, diffuse thickenings in intestinal or oesophageal regions, and proctodeal and caudal abnormalities were observed in 1 out of 2,000 to 1 out of 150 of different blackhead-carrying stocks. Similar abnormalities were not observed in larvae from blackhead-free stocks. In a limited number of observations, 50% of the abnormalities were in the anterior cuticle, which was to be expected from the pattern of the embryology of nematodes.

—R. GWATKIN.

DEVOLT, H. M. (1950.) **The different effect of artificially and naturally induced blackhead (infectious enterohepatitis) of turkeys on the prophylactic action of one quinoline derivative.** —*Poult. Sci.* **29.** 924–926. [Author's conclusions copied *verbatim*.] **1323**

One quinoline derivative, chlorohydroxyquinoline, prevented blackhead in turkeys induced artificially from cultures, but failed to prevent blackhead induced by soil infection.

Artificial infection induced by cultures of *Histomonas meleagridis* cannot in all cases be regarded as an adequate substitute for natural infection in testing the prophylactic action of certain drugs.

FOSTER, A. O. (1949.) **The economic losses due to coccidiosis.**—*Ann. N.Y. Acad. Sci.* **52.** 434–442. [Author's conclusions copied *verbatim*.] **1324**

The economic loss from coccidiosis in poultry and cattle is estimated to amount to about 10 million dollars annually in each instance. The loss in sheep is estimated at one-half million, and, for all other animals, a similar amount. The aggregate economic loss from the disease in all classes of farm and related stock, therefore, is conservatively placed at 21 million dollars annually.

DUNLAP, J. S., HAWKINS, P. A. & NELSON, R. H. (1949.) **Studies of sheep parasites. IX. The development of naturally-acquired coccidial infections in lambs.**—*Ann. N.Y. Acad. Sci.* **52.** 505–511. [Authors' summary copied *verbatim*.] **1325**

The course of naturally-occurring coccidial infections in lambs and sheep has been determined. The bedding is a source of coccidial infection to young lambs. There is a resistance shown by the older sheep to coccidial infections. Natural infections encountered in this study were of a mixed nature, with *E. arloingi* and *E. parva* being encountered most frequently. In the small number of lambs studied there was a correlation between the time of the first oocysts and the height of the peak reached.

PELLÉRDY, L. (1949.) **Studies on coccidia occurring in the domestic pig, with the description of a new Eimeria species (*Eimeria polita* sp.n.) of that host.**—*Acta vet. hung.* **1.** 101–109. [In English.] **1326**

A new Eimeria species parasitizing the pig was identified and named *Eimeria polita*. The author listed six species of coccidia occurring in swine, *E. debliecki*, *E. scabra*, *E. perminuta*, *E. spinosa*, *E. scrofae* and *Isopora suis*. The oocysts of *E. polita*, which closely resemble those of *E. scabra*, are ovoid in shape, measure 23–27 μ in length, and 18–21 μ in width. The walls of the oocysts are 1–1·5 μ thick, brown in colour, and smooth or slightly roughened, with an imperceptible micropyle. Segmentation of the cytoplasm of the sporont begins on the sixth day.

Three young pigs were artificially infected with *E. debliecki*, *E. scabra* and *E. polita*. The oocysts of the various species appeared in the faeces on the 5th–6th, 9th and 10th days after infection, respectively.—D. W. JOLLY.

WHEELER, R. S., HOFFMANN, E. & BARBER, C. W. (1948.) **The effect of thiouracil-induced hypothyroidism on the resistance of chicks artificially infected with *Eimeria tenella*.**—*J. Amer. vet. med. Ass.* **112.** 473–474. **1327**

A study was made to determine whether thiouracil-fed chickens are more susceptible to an artificially induced caecal coccidiosis than untreated controls, or chickens treated with thyroxin to produce hypothyroidism. Ninety-four chicks two-weeks-old were divided into four groups, and fed the same standard ration. To that of group one, 0·1% thiouracil was added, and to group two 0·02% thyroxin. The remaining two groups were coccidia-infected and non-infected controls. Twelve days after the commencement of the treatments, all birds

except the non-infected controls, were individually inoculated *per os.* with 3 ml. of a suspension containing 20,000 sporulated oocysts per ml. of *E. tenella.*

Results were assessed by the mortality per group and subsequent weight gains up to 12 days after infection. The percentage mortality per group was as follows; infected controls 47%, thiouracil-fed group 50%, thyroxin-fed group 36%, uninfected controls 0%. No difference was observed in the body weight gains between the infected controls and the thiouracil-fed group. In the thyroxin-fed group however, there was a slightly better average increase in weight.

The authors concluded that thiouracil treatment was not prejudicial to the survival of birds artificially infected with caecal coccidiosis under the conditions of the experiment. The results indicated by the thyroxin-fed group were an apparent improvement on the other infected groups, but this was not statistically significant.
—D. W. JOLLY.

MOREHOUSE, N. F. (1949.) **Coccidiosis as a disease of turkeys.**—*Ann. N.Y. Acad. Sci.* **52.** 501–504. [Author's summary copied *verbatim.*] **1328**

Coccidiosis in turkeys is caused by two known species of *Eimeria*, but it has been suggested that at least one other species may be involved. While mortality under field conditions has been estimated as low as 2%, mortality under experimental conditions has been as high as 6·3% for *E. meleagridis* and 100% for *E. meleagrimitis.* Prevalence of the infection in farm flocks, according to diagnostic records, varied from 10·69 to 27·3%. Thus, coccidiosis in turkeys appears to be a more serious problem than has usually been recognized.

MOREHOUSE, N. F. (1949.) **Experimental chemotherapy of coccidiosis in turkeys.**—*Ann. N.Y. Acad. Sci.* **52.** 589–594. [Author's summary copied *verbatim.*] **1329**

The four inorganic arsenic compounds tested—arsenic trioxide, ammonium arsenate, lead arsenate, and copper arsenite—were highly effective for the control of *Eimeria meleagridis* infection in turkeys but were toxic at the dosages used.

Of the ten organic arsenic compounds tested, sodium 4-chlorophenyl-arsonate was most effective and 3-nitro-4-hydroxyphenylarsonic acid showed some value for the control of *Eimeria meleagridis* infection in turkeys. All others, including hydroxy, amino, and halogen derivatives of phenylarsonic acid, were of little or no value when used as indicated.

Of the six sulfonamides and one sulfone screen-tested, only N^1 benzoyl sulfanilamide was ineffective.

VAN DEN BERGHE, L., VINCKE, I. H., CHARDOME, M. & VAN DEN BULCKE, M. (1950.) *Babesia rodhaini n sp.* d'un rongeur du Congo Belge transmissible à la souris blanche. [*Babesia rodhaini*, **a new piroplasm of a wild rodent in the Belgian Congo, transmissible to white mice.**] —*Ann. Soc. belge. Méd. trop.* **30.** 83–86. **1330**

A new species of *Babesia* is described. Annular forms are most common and in some of the pear-shaped organisms there is a small granule of nuclear material alongside the main nucleus. Schizogony often produces four merozoites in the form of a cross.

The incubation period for mice is 3–10 days.—JAS. G. O'SULLIVAN.

METZIANU, T. (1947.) *Theileria mutans* en Roumanie. [*Theileria mutans* **in Roumania.**] —*Ann. Parasit. hum. comp.* **22.** 138–142. **1331**

Following nine sudden deaths in cattle, P.M. examination was inconclusive. At the next outbreak *Th. mutans* was demonstrated in the blood. The symptoms are described as is the morphology of the parasite in the blood and spleen. It was differentiated from *Th. dispar.*

This is the first time the disease has been recorded from Roumania.—JAS. G. O'SULLIVAN.

WESTPHAL, A. & FINKE, L. (1950.) Der Hund als epidemiologischer Faktor der Toxoplasmose des Menschen. [**Dogs as epidemiological factors in human** *Toxoplasma* **infection.**]—*Z. Tropen. Parasitol.* **2.** 236–238. [Abst. from English summary.] **1332**

Toxoplasmosis in human beings has some relation to toxoplasmosis of dogs kept in the same household, as now proved in several instances when the dogs could be examined during life by the Sabin-Feldman test and gave a positive titre. In view of the irremediable damage to brain and eyes caused by toxoplasmosis in man, the infection in dogs deserves more attention than it has so far received.

LAVEN, H. & WESTPHAL, A. (1950.) Die Übertragung von Toxoplasma gondii unter besonderer Berücksichtigung des Blutes als Infektionsquelle. [**Epidemiology and transmission of** *Toxoplasma gondii* **infection.**]—*Z. Tropen. Parasitol.* **2.** 221–235. [Abst. from English summary.] **1333**

Present knowledge of the epidemiology of toxoplasmosis is discussed. Observations made by the authors point to the possibility that blood-sucking ectoparasites transmit the infection.

In mice intravenously infected with *Toxoplasma gondii* parasites could be demonstrated in the circulating blood. They disappear from the circulation a few hours after infection and reappear shortly before death. The reappearing parasites proved infective. As a rule their number is low, yet in one case the blood rate was so high that such animals may be considered as peculiarly suitable spreaders of infection.

Intraperitoneally a few parasites, even a single one, are infective for white mice.

On the basis of these facts transmission experiments were carried out, using white mice as donors, rat fleas as transmitters, hamsters and rats as recipients. While flea bites did not transmit, injection of crushed fleas led to infection.

Healthy mice, when infested with fleas, free themselves by eating them, whereby they could become infected.

This mode of transmission must be considered exceptional.

See also absts. 1454–1455 (animal diseases transmissible to man); 1494 (trichomoniasis); 1562 (report, Lister Institute).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

MÖHLMANN, H. & POTEL, K. (1950.) Beitrag zur Differentialdiagnose der Maul- und Klauenseuche. **[Differential diagnosis in foot and mouth disease.]**—*Berl. Münch. tierärztl. Wschr.* No. 5. pp. 89–91. **1334**

By a combination of methods—complement fixation, experimental transmission, examination of histological sections—a stomatitis occurring in cattle in East Germany, and resembling F. & M. disease was proved to be due to some other cause. The condition was not contagious and the country was free from F. & M. disease at the time. No new information is presented.
—H. H. SKINNER.

RAMON, G. (1949.) La vaccination anti-aphteuse et ses progrès. L'œuvre de l'Office International des Epizooties en ce domaine. **[The progress of immunization against foot and mouth disease.]**—*Bull. Off. internat. Epiz.* **31.** 298–311. **1335**

A discussion of the part played by the activities (meetings, resolutions, Bulletin) of the Office International des Epizooties, now in its 25th year, in assuring the discussion and spread of information relating to the control of F. & M. disease, with special reference to the problem of vaccination.—H. H. SKINNER.

ANON. (1949.) Procès-verbal de la Conférence convoquée sous l'égide de l'Office International des Epizooties pour l'étude de la production du vaccin anti-aphteux à Berne, du 4 au 7 mai 1949. **[Proceedings of the Conference on production of foot and mouth disease vaccines at Berne 1949, convened by the Office International des Epizooties.]**—*Bull. Off. internat. Epiz.* **31.** 397–426. **1336**

This was the third international conference of its kind and reports were presented by delegates from Belgium, Denmark, France, Germany, Switzerland, Italy, Mexico and the U.S.A., dealing with:—Techniques in vaccine production (Willems, Moosbrugger, Ubertini); Antibodies in vaccinated cattle (Girard); Cultivation of the virus in fertile hens' eggs (Traub); Inactivation of the virus by ultra-violet light (Schmidt); Studies on the specificity of virus types, effect of X-rays, excretion of virus by convalescent g. pigs and cattle, and the haemagglutination reaction (Michelsen); The Mexican campaign against the disease (Zozaya, Osteen, Telles-Giron). Many of these reports have since appeared in the *Bull. Off. internat. Epiz.* and elsewhere.

A general uneasiness was evident in regard to the multiple methods at present adopted by the countries which prepared the Schmidt-Waldmann vaccine. The standardization of the aluminium hydroxide used was considered by some to be of great importance. Further information was also required on the selection of antigen and on its subsequent treatment in order that the strength and duration of the immunity induced by the vaccine might be improved. A single vaccine for international use was not yet feasible and it was too early to lay down a standard method for testing the efficacy of vaccines.

Osteen reported that the vaccines prepared by the Mexico-American Commission were tested on 20 cattle with 20 controls. Ten in each group were tested for immunity by intralingual inoculation of virus and ten by contact. The first method was the more severe and gave more regular results. It showed an absolute immunity to be present in only 13·8% of the vaccinated animals as compared with 80% in those in the contact test. The vaccines were considered to be satisfactory if they protected at least 60% of the test animals. To date, only 0·8% of the vaccinated test animals had developed generalized lesions as compared with 93% of the controls. Tests comparing the efficacy of the subcutaneous and intradermal routes of inoculation of the same dose of vaccine had revealed no difference.

A resolution was passed to the effect that in order to avoid confusion F. & M. disease virus strains should be designated as type O (Vallée), A (Vallée) or C (Waldmann). If variants of these types were found they should be defined by these letters followed by an arabic numeral.

—H. H. SKINNER.

SCHMIDT, S. (1950.) Quelques remarques sur l'épreuve de l'innocuité du vaccin anti-aphteux, type Schmidt-Waldmann. [**Tests of the safety of foot and mouth disease vaccines of the Schmidt-Waldmann type.**]—*Bull. Off. internat., Epiz.* **33.** 260–270. **1337**

In Denmark the monovalent S-W vaccine is prepared with a content of 1·4% antigen and the current method adopted in tests for absence of infectivity and for immunizing power comprises the injection of three cattle with 30 ml. of this product by the subcutaneous route and the simultaneous inoculation of 2 ml. into the tongue mucosa. After 15 days the test for infectivity is complete and the cattle are then tested for immunity. This is the first test of the vaccine's efficacy and a second is then carried out using the same technique but with the vaccine diluted to contain 0·8% antigen which is the form in which it is issued for use in the field.

The intralingual test would be expected to be the most sensitive one for the detection of infectivity, but during the preliminary routine test of one S-W vaccine all three cattle reacted simultaneously with lesions on the feet and no lesions on the inoculated tongue. The possibility of this being an accidental infection was ruled out and the virus in the lesions was the same type as that used to prepare the vaccine. In a personal communication Waldmann had described a similar experience.

Another vaccine had proved to be non-infective when tested 1, 10 and 17 months after preparation, six cattle being used each time and the lingual inoculation being omitted. Yet on three occasions after this when the vaccine was tested in 30 g. pigs by simultaneous intramuscular and intradermal inoculation, it was found to be infective for 11 of them. This vaccine was then tested again on 24 cattle by simultaneous subcutaneous and intralingual inoculation and it again failed to cause any infection.

This result led to the tests of 31 vaccines being made on g. pigs as well as cattle; of the 30 vaccines which proved to be non-infective for cattle three were infective for g. pigs and the virus isolated from these animals corresponded in type with that used to prepare the vaccine and was in all cases type Vallée " O ". The possibility of these results being accidental was ruled out. The probable explanation was thought to lie in the observation that the bovine strain which had been used to prepare these vaccines had in successive passages in cattle become more virulent for g. pigs in which titres exceeding 10^{-6}, and higher than those obtained in the cattle themselves, had been found.

It was therefore to be expected that the g. pig might on occasion prove to be capable of detecting minimal amounts of surviving virus in vaccines which could not be detected by cattle.

Where bovine strains used to prepare vaccines have undergone this unusual change it would be advisable to include a test on g. pigs in the routine vaccine infectivity tests and vaccines in which this test is positive should be rejected. All such tests are however insufficient to guarantee that a vaccine would be completely non-pathogenic when used to vaccinate many thousands of animals.—H. H. SKINNER.

FOGEDBY, E. (1950.) Om fremstilling af vaccine mod mund- og klovesyge. [**Preparation of vaccine against foot and mouth disease.**]—*Maanedsskr. Dyrlaeg.* **61.** 289–296. [Abst. from author's English summary.] **1338**

The most effective adsorbate vaccines were produced at pH values near 8, whereas vaccines produced at pH less than 7 or greater than 9 generally had only a very poor immunizing effect.

These investigations were of importance to official vaccine production, as certain ineffective vaccines were found to have been prepared at too low a pH value.

The possibility of lowering the virus content of the vaccine from 1·4 to 0·4% was investigated. Vaccines containing 0·4% of virus had a good immunizing effect, and they could be prepared by simple dilution of 1·4% vaccines.

FOGEDBY, E. & JACOBSEN, N. (1950.) Dyrkning af mund- og klovesygevirus på epitelvaev af oksetunger. [**Cultivation of the virus of foot and mouth disease on epithelial tissue from ox tongues.**]—*Maanedsskr. Dyrlaeg.* **61.** 297–303. [English summary modified.] **1339**

Viruses were grown *in vitro* on epithelial tissue from ox tongues after the method suggested by Frenkel. Virus of type " O " was grown in two series through 100 and 80 passages, respectively. Three different variants of type " A "—Mexico 1, Lindolm, and Rhodesia virus—were grown through 50, 24, and 22 passages respectively. As yet, it has not proved practicable to grow a fourth " A " variant—Mexico P virus—and " C " virus through a number of passages.

The cultivated virus strains have preserved their type characters. Further, they have preserved a fairly high degree of pathogenicity for cattle and g. pigs, but their concentration is somewhat lower than that of the corresponding natural virus.

Cultivated virus may be employed as the source of virus for adsorbate vaccines, and such vaccines possess a good immunizing effect. The epithelial tissue may be stored for 4–7 days before it is used for the cultivation of virus.

REMLINGER, P. & BAILLY, J. (1949.) Apparition " de novo " de certaines maladies infectieuses; cas de la pseudo-rage. **[Aujeszky's disease in a dog in Tangier.]**—*Maroc méd.* **28.** 485–488. **1340**

During the past 12 years, two cases of Aujeszky's disease have been reported in Tangier, occurring at 10 years' interval and in different parts of the town. The first occurred in 1939, in a Basset hound aged three years. The first symptoms were anorexia and slight diarrhoea. Some days later there was fever (40° C.), also such interference with swallowing that the dog had to be fed with fluids by intubation. There was neither maxillary paralysis nor pruritus, and the animal's temper and general behaviour were unaffected. On the tenth day there was generalized paresis, most marked in the hind limbs, but pruritus and loss of temper were still absent. It died the same day. Immediate P.M. examination failed to reveal any macroscopic lesion, but there was marked reduction of Fehling's solution by the urine. Because rabies was suspected, brain tissue was inoculated into the dura mater of a rabbit, but three days later the animal had pruritus typical of Aujeszky's disease, with encephalitic attacks and excessive salivation. It died on the fourth day. Sub-inoculation produced positive results.

Case 2 occurred after an interval of 10 years, during which no similar instance was reported, in another young dog, born in a district in which the disease was unknown and brought to the town. The bitch was used in shooting hares and pheasants up to a few days before its illness. The first symptom was an intense pruritus, without alteration of psyche but with such evidence of distress that the owner took the animal to a clinic, where Aujeszky's disease was diagnosed. Violent attacks of pruritus, which made the animal scratch so that loss of hair and injury to the skin ensued, alternated with signs of asthenia and dyspnoea. The attacks continued and increased until the dog died. Inoculation of brain tissue into another dog produced a similar violent attack of pruritus, terminating fatally within 8 hours. Sub-inoculation into 2 rabbits produced in each a syndrome typical of Aujeszky's disease.

The authors discuss the possible explanation of the long interval between the cases and offer the hypothesis of latent virulence on the part of an organism which is normally widespread in its incidence, disease being caused only when the milieu is favourable to the virus.

A comparison is made with Sabin's virus " B " in symbiosis with the herpetic virus.

—W. TATHAM THOMPSON.

BAILLY, J. (1950.) Prophylaxie de la rage. **[Prevention of rabies.]**—*Bull. Off. internat. Epiz.* **34.** 16–36. **1341**

This paper is confined to prophylactic methods which are in current use in the field, notably the phenolized vaccines which combine simplicity of preparation and use with cheapness and efficiency. Vaccines containing active fixed virus of the Umeno and Doi type have given some unfavourable results despite their extensive use in the U.S.A. Vaccines containing inactivated fixed virus have been put to severe test in Tangier with satisfactory results and the success following their use in Hungary, Corsica and Morocco is quoted. 0·35% accidents have been noted in man, but better results were obtained with animals, probably because of prior preventive treatment and because of the larger doses used. Vaccination accidents are enumerated but these appear to be less frequent with inactivated virus. The phenomenon of sudden death seen in rabbits following vaccination has been observed in sheep and in one dog, but only where the central nervous system tissue of rabbits was used in the preparation of the vaccine. Details of the manufacture of phenolized inactivated fixed virus vaccine in Tangier are given. Young female goats are preferred as a source of virus.

B. considers a change in legislation advisable, with the introduction of vaccination as a complement to police measures.—G. V. LAUGIER.

DÜWER, I. (1950.) Über die derzeitige Tollwutepizootie zwischen Oder und Elbe. **[The present epidemic of rabies in the part of Germany between the rivers Oder and Elbe.]** —*Berl. Münch. tierärztl. Wschr.* No. 3. pp. 43–44. **1342**

In the course of the current rabies epidemic in Germany which began in June 1947, bites from rabid animals have infected 532 people. The animals incriminated included 163 dogs, 55 cats, 18 foxes, 13 badgers, 1 marten, 2 horses and 2 oxen. Positive reactions were found in certain other animals examined, increasing the

total of known infections to 196 dogs, 27 foxes, 16 badgers and 10 oxen. Reports of foxes found dead suggest a widespread epidemic among them, and the case-histories of some of the infected dogs include an account of a fight with a fox. Accounts of an unusually high proportion of infection of wild animals in 1948–9 have been received from Austria, and recent figures from the U.S.A. show an increase in rabies among foxes. Although in the German epidemic dogs are still in the majority (68%), D. suggests that foxes may have been the primary source of infection and considers that the wholesale shooting of foxes and other wild carnivores in and beyond the epidemic area, together with the shutting-up of all dogs, would be the best way of ending the epidemic.—W. TATHAM THOMPSON.

GOOR, S. (1949.) **Rabies in animals in Palestine and its control.**—*Harefuah.* **37.** [In Hebrew. pp. 76–77. English summary p. 77. Abst. from summary.] **1343**

During 1930–37 in Palestine there were 1,480 cases of rabies in dogs, 270 in cats, 227 in jackals, 109 in horses, mules and donkeys, 79 in cattle and 39 in other animals. Up to 1939 human cases averaged 3–7 per year. No cases in man were recorded during 1940–46. The highest incidence in animals was in 1940–41; the disease was disseminated by rapidly increasing numbers of stray dogs feeding on army camp refuse. The incidence was higher in the winter months and in the more densely populated coastal areas.

Since the establishment of the state of Israel the rabies problem has become even more acute because of the innumerable dogs left behind by Arab refugees. 150 cases of rabies in animals were recorded during the period from May 1948 to April 1949. Control is conducted by the government veterinary services jointly with the local authorities. Measures of control include regular campaigns against stray dogs and cats, foxes, jackals, etc. Compulsory vaccination and setting up of centres for observation of suspected animals are being planned.

—E. G.

LEVADITI, C., VAISMAN, A. & DUNOYER, M. (1947.) Potentiel proliférátif et négrigenèse d'une souche de virus rabique des rues (Tanger C). **[Proliferative and Negri body producing power of a strain of rabies street virus (Tangier C).]**—*Bull. Acad. Nat. Méd.* **131.** 593–596. **1344**

The characteristics of strain Tangier C, a rabies street virus of feline origin were studied. Its power to produce Negri bodies was tested by intracerebral mouse inoculation and found to be persistent in 26 passages. Incubation periods were 13 days for the first passage, eight days for the 2nd–4th, about seven for the 5th–8th and approximately six days for the remaining passages. Negri bodies were numerous, of large size and easily stainable. There was no appreciable difference between this strain and other strains in respect of the moment of appearance of Negri bodies. The poliferative potential of strain Tangier C was, however, much higher than that of other strains used in comparison.—E. G.

BÉQUIGNON, R., LAMY, R. & VIALAT, C. (1949.) Contribution à l'étude de la rage. I.—De la virulence de la rage fixe par voie sous-cutanée après addition de bave de chien normal. II.—De la virulence de la rage fixe par voie sous-cutanée après addition de hyaluronidase. **[I. Virulence of fixed rabies virus on subcutaneous inoculation with saliva of a normal dog. II. Virulence of fixed rabies virus on subcutaneous inoculation with hyaluronidase.]** —*Ann. Inst. Pasteur.* **76.** 283–285; & 285–286. **1345**

Fixed rabies virus to which an equal part of dog saliva had been added was incubated at 22° C. for one hour and 1 ml. of the mixture injected subcutaneously into four g. pigs. Two of the animals died having shown typical symptoms of rabies whereas it is well known that the subcutaneous injection of fixed virus alone normally does not set up the disease. The activating agent is absent from the saliva of the white man so that it cannot be salivary amylase, but a "spreading factor" which increases the infectivity of the virus has been thought to exist in the saliva from other species. It is now suggested that this is the enzyme hyaluronidase which is present in dog saliva. This was confirmed when it was found that the subcutaneous injection of fixed virus to which pure hyaluronidase had been added set up typical rabies in three g. pigs.—J. A. NICHOLSON.

REMLINGER, P. (1950.) Propagation de la rage chez le rat. **[Rabies in rats.]**—*Maroc. méd.* **29.** 323–324. **1346**

The existence of rabies in rats in nature is problematical. Two cases are quoted in which rats were directly implicated and a very virulent strain isolated. Evidence to date has been presumptive and based on the marked increase in the number of persons bitten by rats. Evidence and statistics from a number of countries are given to support the view that rats are a definite danger in the Mediterranean countries.

—G. V. LAUGIER.

BATES, J. D. (1950.) **Failure of antibiotics in experimental rabies.** [Correspondence.]—*Nature, Lond.* **166.** 155–156. **1347**

Chloromycetin given *per os*, procaine penicillin and streptomycin, both given intramuscularly, are without effect in rabbits infected intracerebrally.—MALCOLM WOODBINE.

DEVAKULA, M. R. S. (1950.) **Report on 2 cases of neuroparalysis in dogs after antirabic vaccination.**—*J. Vet. Ass. Thailand.* **2.** 71–76. **1348**

The aetiology of neuroparalytic accidents following antirabic vaccination is discussed and its manifestations in man are described. In Thailand there have been no previous reports of such accidents in man, possibly because of the high quality of the vaccine prepared. Two cases in dogs following the use of vaccine from Indo-China are described, one characterized by a peripheral neuritis of the optic nerve, the other resembling the ascending paralysis of the Landry type in man. The therapeutic use of antihistamines, vitamins B_1 and B_6, salicylates, and calcium were attended with some success.

—G. V. LAUGIER.

REMLINGER, P. & BAILLY, J. (1950.) 25 ans de vaccination antirabique des animaux. [**Twenty-five years experience of vaccination of animals against rabies.**]—*Bull. Acad. vét. Fr.* **23.** 109–115. **1349**

The incidence of rabies in various countries is recorded, and it is noted that in France the incidence has become low; nevertheless rabies is to be regarded as a world problem rather than a national one. The Pasteur Institute of Tangier has studied vaccination since 1925. Two types of treatment have evolved, ordinary treatment and reinforced treatment; these are described in detail and include the treatment of large animals. Since 1925 some 56,550 animals have been vaccinated and only one real failure has been recorded.—G. V. LAUGIER.

MARNEFFE, H. & SEYS, H. (1949.) Note sur la prévention du choc phéniqué au cours du traitement antirabique: importance de la dispersion des injections. [**Prevention of toxic effects (shock) by phenol in rabies vaccines.**]—*Ann. Inst. Pasteur.* **77.** 744–749. **1350**

The risk of shock can be entirely eliminated by injection in a cycle of 30 chosen places. No cases of shock have appeared during the two and a half years since this regimen was introduced.

—MALCOLM WOODBINE.

VAN ZWOL, H. S. (1948.) De enting met virulent kippenpokvirus. [**Immunization with virulent fowl pox virus.**]—*Tijdschr. Diergeneesk.* **73.** 963–967. **1351**

The author reports on field tests in which the safety and efficiency of virulent fowl pox virus vaccine, cultivated on chick embryos, was tested on 2,178 fowls and was compared with the leg inoculation of 22,000 fowls with live pigeon pox virus vaccine. He decided in favour of the latter vaccine. Although no unsatisfactory results were obtained with the fowl pox vaccine it is feared that in some cases it may lead to an active spread of the disease to untreated flocks.

—P. L. LE ROUX.

RAMON, G., THIERY, J. P. & RICHOU, R. (1949.) Sur l'atténuation de la virulence et sur l'épuration bactérienne du virus de la vaccine par l'action simultanée du formol et de la température. Conséquences. [**Formolized smallpox vaccine.**]—*Rev. Path. comp.* **49.** 381–383. **1352**

Previous papers by these authors on formolized smallpox vaccine are reviewed. Observations by Nélis and Lafontaine (1948), in the course of similar work on the action of formaldehyde on vaccines, that formaldehyde has practically no action on any chance bacteria which may be present in the vaccine, are contrary to the author's findings. This discrepancy is ascribed to the use by Nélis *et al.* of glycerin suspensions in which the bactericidal action of the formaldehyde is likely to be less marked than in the aqueous suspensions employed by Ramon *et al.*—J. M. JACOBS.

HENEY, J. W. (1948.) **Respiratory disease of the horse.**—*Irish Vet. J.* **2.** 89–94. **1353**

An account of an outbreak of equine influenza in Dublin. H. strongly advises the use of a *Streptococcus equi* vaccine at the outset in order to offset as far as possible the risk of streptococcal pneumonia. As all the horses were given the vaccine there was no control group and the efficiency of the technique cannot be ascertained. Daily temperatures were taken and febrile-horses were rested from work and treated with large doses of penicillin. The penicillin was given in large widely spaced doses (1–3 days) and as the author points out administration at much shorter intervals would probably have been far more effective.—JAMES H. HALE.

HJÄRRE, A. & BAKOS, K. (1950.) Experimentelle Untersuchungen über Schweineinfluenza in Schweden. [**An experimental study of swine influenza.**]—*Mh. Vet.-med.* **5.** 174–178. **1354**

The authors discussed the differences observed in swine influenza in various countries, and described the type occurring in Sweden. In

P.M. examinations pleuritis or pericarditis is not encountered, whereas non-purulent encephalitis is common. The lung changes considered to be characteristic consist of hyperplasia of lymphatic tissue and infiltration of the smaller bronchi and vessels with lympho-histiocytes, giving a naked-eye appearance of broncho-pneumonia.

The authors found that *Haemophilus* spp. could be relegated to a minor aetiological role, their presence not being essential for the development of swine influenza. The severity of a case depends more on the quantity and variety of virus than on secondary invaders.—ROY MACK.

SHECHMEISTER, I. L. (1950.) **Studies on the experimental epidemiology of respiratory infection. III. Certain aspects of the behavior of type A influenza virus as an air-borne cloud.** —*J. infect. Dis.* **87.** 128–132. [Author's summary slightly modified.] **1355**

Certain aspects of the behavior of the aerosol of the W.S. strain of type A influenza virus were investigated.

The mechanism of production of the virus aerosol did not affect the titer of the virus as measured in mice. The percentage recovery of the virus aerosol was independent of the initial concentration of the atomized suspension. The effect of the relative humidity on the recovery the aerosol was investigated. High aerosol recovery was obtained in the extreme ranges of 32 and 68% relative humidity, while a minimum recovery was obtained at 60% relative humidity. The mass mean diameter of the influenza virus aerosol was determined to be less than 0·5 μ.

This influenza virus is apparently characterized by greater infectivity when introduced by the air-borne rather than by the intranasal route.

KALTER, S. S. (1950.) **A rapid method for detection of influenza virus during epidemics.** —*Proc. Soc. exp. Biol., N.Y.* **74.** 607–608. [Author's summary copied *verbatim.*] **1356**

A rapid method for the detection of influenza virus in throat washings during epidemics is described and discussed. Essentially this method consists of concentrating and eluting the virus by red cell adsorption and then neutralizing with specific antisera.

BERNKOPF, H. (1949.) **Cultivation of influenza virus in the chorio-allantoic membrane of de-embryonated eggs.**—*Proc. Soc. exp. Biol., N.Y.* **72.** 680–682. **1357**

A method is described whereby the embryo and yolk sac are removed from eggs incubated for 14–15 days. The egg with the chorio-allantoic membrane intact is filled with Tyrode's solution containing virus. A satisfactory growth of virus was demonstrable after 24 hours' incubation. By this method larger amounts of fluid can be introduced into the egg than is possible by the more usual chick embryo techniques. The possible applications of the method are discussed.—D. LUKE.

POLLEY, J. R., BURR, M. M. & GILLEN, A. L. (1950.) **Some properties of normal chick allantoic fluid in relation to influenza virus hemagglutination.**—*Canad. J. Res*, Sect. E. **28.** 113–120. [Authors' abst. copied *verbatim.*] **1358**

The pH, oxidation-reduction potential, total solids, nonspecific hemagglutination titer, and the titer of the inhibitor of influenza virus hemagglutination have been determined in the normal allantoic fluid of the chick embryo as the incubation time increased. These determinations were repeated after the allantoic fluid had been stored for 48 hr. at 0° C. It was found that as the incubation time increased (1) the pH decreased progressively, (2) the Eh [oxidation-reduction potential] remained positive throughout, (3) the total solid content increased, (4) the nonspecific hemagglutination titer remained negligible, (5) the inhibition titer increased rapidly. Storage for 48 hr. at 0° C. produced no change other than a small rise in the pH. By buffering the allantoic fluid *in vivo*, it appeared that the increasing inhibition titer was not directly related to the decreasing pH. The inhibition titer of the allantoic fluid was not decreased after dialysis, indicating that it is not affected by the amount of urates in the fluid. Thus it appears that the inhibition titer is related directly to a component of the increasing total solids which is unidentified as yet.

ANGULO, J. J., WATSON, J. H. L. & OLARTE, J. (1950.) **Artifacts, with other nonspecific appearances resembling virus particles, and the so-called filamentous forms of influenza and fowl pest viruses in human skin tissue fluid examined with the electron microscope.**—*J. Bact.* **60.** 129–138. [Authors' summary copied *verbatim.*] **1359**

Filaments morphologically identical to the so-called filamentous forms of influenza and fowl pest viruses were observed with the electron microscope in skin tissue fluid from a patient with pinta, a tropical treponematosis. Particles resembling those of influenza, poliomyelitis, and pox group viruses are seen in several fields. Evidence is presented that many of these appearances are artifacts originating from erythrocyte stromatolysis, whereas others are either crystals with rounded corners or what may be protein particles.

KOPROWSKI, H., JERVIS, G. A., JAMES, T. R., BURKHART, R. L. & POPPENSIEK, G. C. (1950.) **A study of canine encephalitis.**—*Amer. J. Hyg.* **51.** 63–75. **1360**

The concepts engendered by the work of Rubarth (1947) and McIntyre, Trevan & Montgomerie (1948) on the problems of viral infections (particularly encephalitis) of dogs make this an important paper.

The study was initiated by observations on 22 dogs obtained from three epidemic foci in one of which 60 out of 70 dogs died in the same kennels (with scattered cases the total was 163); all of the 60 had received distemper antiserum some four months previously while the adult dogs in this kennel had been vaccinated. The age of the animals was mostly under a year and the duration of the illness varied; the period with neurological signs was from 1–16 days. Fever, anorexia, depression, loss of weight, discharge from eyes and nose, mild diarrhoea all preceded motor impairment, myoclonic movements of limbs and jaws and convulsions. The main pathological lesions in the nervous system consisted of irregular foci of demyelination (of varying severity), involving the cerebellum and adjacent regions in all cases but one; there was relative preservation of axis cylinders and demyelination was thus the earliest selective damage; proliferation of atypical neuroglia with giant multinucleated forms was characteristic but perivascular infiltrations were conspicuous in only three cases; thickening of vessel walls and swelling of endothelium (mainly of cerebral vessels) was present; and intranuclear inclusions in the cells of the walls were also seen. Occasionally the lesions were necrotizing in character.

Pooled tissues from four separate dogs were inoculated into groups of ferrets all of which developed typical distemper-like illness between 8–23 days. After three passages through ferrets material was inoculated into four puppies (seven weeks old and bred on the premises); two were inoculated intracerebrally and two intraperitoneally. Without clinical evidence of distemper and without fever (the temperature going to subnormal levels) all died within six days. After the prodromal symptoms had set in there was acute fulminant illness with convulsions and paralysis in the two injected intracerebrally. Ferrets injected with tissues from these puppies also developed distemper. Cross-immunization rather than cross-neutralization tests were done; two non-immune ferrets developed distemper on the 13th day while two immune ones were asymptomatic within a 60-day observation period. In one of the experimental puppies inoculated intracerebrally there were lesions of the same nature as those described; in the other there was meningitis; in the two injected intraperitoneally there were no lesions in the nervous system. There were no lesions in the nervous system of any ferret.

The results are discussed at length in the light of old and current ideas on the existence of viral conditions in dogs (U.S.A. and Britain) besides distemper with particular reference to hard-pad disease. The authors conclude by stating that there could be no escape from the conclusion that they were dealing with the distemper virus which had been responsible for this demyelinating encephalitis.

[This is in accordance with the work of Weston Hurst [*V.B.* **16.** 188] in Australia but contrary to the ideas of McIntyre *et al.* In the face of all their work it might seem invidious to venture any criticism at all, for their paper is a clear factual presentation of evidence of their own experience. If one has beliefs biased in one direction their data will be eagerly accepted, if in the other, sins of omission will be avidly sought out.]—J. R. M. INNES.

EDWARD, D. G. ff. (1950.) **The relationship of a newly-isolated human encephalitis virus to louping-ill virus.**—*Brit. J. exp. Path.* **31.** 515–522. [Author's summary copied *verbatim.*] **1361**

A virus, recently isolated in Czechoslovakia from outbreaks of encephalitis in man, was compared with louping-ill and Russian spring-summer encephalitis viruses. The three viruses were pathogenic for mice; in this animal the behaviour of the Czech virus was similar to that of Russian virus and different from louping-ill virus. Immune sera against louping-ill and Czech viruses neutralized all three viruses to approximately the same degree. Czech antisera fixed complement in the presence of each virus, but louping-ill antisera failed to fix complement with Czech virus. In intraperitoneal cross-protection experiments vaccination against one virus afforded protection against the other two. Using intracerebral challenge, vaccination with inactivated virus followed by living virus produced no significant protection even against homologous virus. After intraperitoneal inoculation with louping-ill virus many mice became infected, but did not die. In spite of developing a natural immunity the survivors did not acquire resistance against virus injected directly into the brain.

MICHAELSEN, L. (1948.) Virusabort hos hoppen. [**Equine virus abortion.**]—*Skand VetTidskr.* **38.** 147–151. **1362**

A discussion of some American and Austrian literature on the subject (5 refs.). The disease

has not been described in the Scandinavian countries.—F. E. W.

MORNET, P. & GUERRET, M. (1950.) Les lésions cutanées dans la peste bovine. **[Skin lesions in rinderpest.]**—*Bull. Acad. vét. Fr.* **23.** 283–285. **1363**

A short clinical report, with photographs, of cases seen in French Guinea.—ROY MACK.

COLE, C. G. & HENLEY, R. R. (1949.) **Experiments on the combined use of crystal-violet vaccine and anti-hog-cholera serum in the prevention of hog cholera.**—*Circ. U.S. Dep. Agric.* No. 807, pp. 1–12. **1364**

Groups of pigs were treated with serum alone; crystal violet vaccine alone; serum and vaccine simultaneously; serum followed by vaccine; and vaccine followed by serum. The experimental pigs were then exposed to swine fever virus.

There was no evidence that the vaccine interfered with the action of the antiserum given at the same time. The results indicated, on the other hand, that the serum very definitely interfered with the action of the vaccine and that there is no justification for the combined use of serum and crystal violet vaccine in the control of swine fever.—D. LUKE.

LÉPINE, P. & ATANASIU, P. (1950.) Existence à Madagascar de l'encéphalomyélite enzootique des porcs. Immunité croisée avec le virus de la maladie de Teschen. Transmission au sanglier. **[Presence of porcine infectious encephalomyelitis in Madagascar.]**—*Ann. Inst. Pasteur.* **79.** 113–120. **1365**

An outbreak of infectious paralysis among swine in Madagascar was, on clinical and pathological grounds, found to be closely allied to Teschen disease. After several unsuccessful attempts (due to rapid autosterilization of the tissues), the virus from Madagascar was passaged by intracerebral inoculation in young French pigs and transmitted without difficulty from them to young wild boars. The latter succumbed with the same clinical and pathological picture as the domestic pigs. Rodents and monkeys were not susceptible. An immune serum, obtained from an animal that survived, effectively neutralized both a virus strain of the authentic Teschen disease and the virus from Madagascar. No epidemiological relation is known to exist between the Central European focus of the disease and the outbreak in Madagascar of the last few years.—A. MAYR-HARTING.

SCHÄFER, W. (1946.) Über den Virusgehalt des Zentralnervensystems von Ferkeln nach intracerebraler Infektion mit Schweinelähmevirus. **[The virus content of the central nervous system of unweaned pigs following intracerebral inoculation with porcine encephalomyelitis virus.]**—*Berl. Münch. tierärztl. Wschr.* August. pp. 18–20. **1366**

The virus content of the central nervous system of piglets, inoculated intracerebrally with porcine encephalomyelitis virus, is small, corresponding to the degree of the histological changes. It is curious that effective vaccines can be obtained from the central nervous system of such animals.—W. R. BETT.

DAVIS, C. L. & ANDERSON, W. A. (1950.) **The rapid diagnosis of contagious canine hepatitis by touch preparation of fresh liver tissue.**—*Vet. Med.* **45.** 435–437. [Authors' summary copied *verbatim.*] **1367**

A rapid diagnosis of contagious canine hepatitis by means of touch preparation of fresh liver tissue is described. The diagnosis was based on the demonstration of intranuclear inclusions in the liver cells. Seventeen cases so diagnosed were subsequently confirmed by histologic section. The touch preparation technic is time-saving as compared with the routine tissue section method, necessitating not more than 30 minutes for the entire procedure.

The importance of early diagnosis and treatment in this highly acute, often fatal disease is emphasized.

DAUBNEY, R., MANSI, W. & ZAHRAN, G. (1949.) **Vaccination against fowl plague.**—*J. comp. Path.* **59.** 1–18. **1368**

The use of various adjuvant materials for enhancing the immunity evoked by inactivated virus vaccines against fowl plague was studied. It was found that emulsification of the formolized infective allantoic fluid, by itself a poor immunizer, with a mineral oil, lanolin and beeswax and the addition of killed acid-fast bacilli produced a vaccine capable of inducing a solid immunity lasting 10–14 months.

The depots of oily vaccine inoculated either intramuscularly or subcutaneously may persist in some cases for periods up to 30 weeks. There is only a very slight local reaction.

About 150,000 fowls have been inoculated with this oily base vaccine containing mammalian tubercle bacilli without ill effect. In a proportion of these, Newcastle disease vaccine was also given simultaneously. Two outbreaks of fowl plague involving large flocks have been successfully controlled by vaccination and segregation.—D. LUKE.

KAPLAN, M. M. (1949.) **Newcastle disease.**—*F.A.O. Agric. Studies.* No. 10, pp. 149–175. **1369**

K. reviewed the present knowledge regarding Newcastle disease with special emphasis on the results of the more recent research work.

—D. LUKE.

CAPOBIANCO, M. (1949.) La pseudo-peste aviaire. [**Newcastle disease.**]—*Bull. Off. internat. Epiz.* **32.** 96–101. **1370**

Newcastle disease appeared in Italy in 1940. In the first few years the main symptoms and pathology involved the upper respiratory tract, but later the main pathological findings were associated with the alimentary tract. Mortality was 50% among infected fowls and about 80% of fowls in infected flocks developed symptoms.

—D. LUKE.

ISAKSSON, A., KULL, K. E. & NORDBERG, B. K. (1948.) Hönspesten i Sverige 1947. [**Fowl pest in Sweden during 1947.**]—*Skand. Vet-Tidskr.* **38.** 154–161. [English summary.] **1371**

In an outbreak of fowl plague which began in Södermanland county at the end of 1947 in a flock of adult fowls, 40 of which died within a week, the only symptoms observed were dyspnoea and diarrhoea.

Serial transmission in fowls was successful, and the infective agent could also be passaged in chick embryos. Haemagglutination by the virus isolated in Sweden was not inhibited by a Newcastle disease immune serum obtained from England.

It was considered likely that the outbreak originated from a large consignment of frozen poultry imported from Hungary and released to the market early in 1947. Offal from some of the poultry carcasses had been fed to the flocks in which outbreaks had occurred.

[In a later paper (Bakos & Nordberg, *V.B.* **20.** 205) it is stated that further work proved the virus to be that of Newcastle disease.]—F. E. W.

LUCAM, F. (1949.) Recherches sur l'epizootie française actuelle de peste aviaire. [**The present fowl pest epizootic in France.**]—*Rev. Med. vét. Lyon et Toulouse.* **100.** 449–467. **1372**

The progress of the recent outbreak of fowl pest in France which began at the end of 1948 is described. Both Newcastle disease virus and true fowl plague virus have been identified in this epizootic.—D. LUKE.

MOINE, G. (1950.) Observations et réflexions sur l'épizootie de maladie de Newcastle apparue dans le Département du Nord en 1949. [**The Newcastle disease epidemic in France, 1949.**]—*Bull. Acad. vét. Fr.* **23.** 417–422. **1373**

M. discussed the progress of Newcastle disease in the Département du Nord in 1949. Twenty outbreaks occurred in poultry and one in pheasants. The disease was also diagnosed in guinea fowl and ducks in contact with sick poultry in one of the outbreaks.—D. LUKE.

SCHMITTLE, S. C. & MANSFIELD, M. E. (1950.) **Studies on Newcastle disease. VI. A field test on hatchery fumigation with formaldehyde against Newcastle disease virus.**—*Cornell Vet.* **40.** 90–92. **1374**

Following the diagnosis of Newcastle disease in a hatchery an attempt was made to control infection by means of formaldehyde fumigation. Pieces of egg shell and cotton wool were contaminated with virus and placed in various parts of the plant. Eight gallons of 40% formaldehyde solution were used for approximately 5,500 cu. ft. of space. After the release of the formalin, doors and windows were kept closed for 20 hours. No virus could be detected on the egg shells or cotton wool exposed to fumigation. Two days later chicks were hatched on the premises and no evidence of Newcastle disease appeared in them or in subsequent hatches over a period of four months.—D. LUKE.

BLANCO, M. M. (1949.) Aportaciones al estudio de la inmunizacion y de las causas que la rebajan en la enfermedad de Newcastle en España. [**Immunization against Newcastle disease in Spain.**]—*Bol. Inf. Col. Vet. Esp., Supl. cient.* **3.** 355–366. **1375**

B. described the advent and spread of Newcastle disease throughout Spain within recent years, and reported his experiences of vaccination against the disease. Vaccines of American origin failed to protect fowls against the indigenous virus; therefore, to be effective, vaccines had to be prepared, in chick embryos, from the local strains. For lasting protection, revaccination had to be carried out every 4–6 months. Poor results were obtained in fowls parasitized with nematodes and cestodes. Likewise, intercurrent infectious disease shortened the period, and lowered the efficiency, of protection.—I. W. JENNINGS.

GENEROSO, J. D. & MENDOZA, I. L. (1950.) **Observations on the use of the Mukteswar strain of virus as vaccine against avian pest in the Philippines.**—*Philipp. J. anim. Indust.* **10.** 163–179. **1376**

A strain of Mukteswar Newcastle disease virus which has survived eight months' storage in a refrigerator was used in the production of

vaccine by passage in chick embryos. Various routes were used for successful vaccination and pricking of the web of the wing with a lancet moistened with vaccine was chosen for field use.

Symptoms of paralysis occurred in about 1·34% of inoculated chickens and there was a temporary suspension of egg laying in adult hens. It produced a solid immunity in about 72 hours and about 50% of birds inoculated when already sick with the disease are stated to have recovered.—D. LUKE.

GUALANDI, G. (1949.) La pseudo peste dei polli e la difesa degli allevamenti a mezzo di vaccini allestiti con embrioni di pollo. [**Control of Newcastle disease with vaccines prepared from chick embryos.**]—*Riv. Med. Vet. Zootec.* **1.** 81–101. **1377**

Chick embryo vaccine was found to confer complete immunity from 15 days after injection. The immunity appears between the 8th–14th days, depending on the individual reaction of each bird and remains at an efficient level at the end of 60 days. The intravenous and intraperitoneal routes of inoculation were found to be superior to the subcutaneous, intramuscular and intradermal routes, and to shorten the period necessary for the setting up of immunity. Chicks required repeated vaccination since they lost their immunity rapidly. Experiments with monovalent vaccines showed slight differences in the immunizing powers of various strains. The antigenic power of the vaccine was unaffected by storage for 180 days in the refrigerator or for 90 days at room temperature.—I. W. JENNINGS.

BURNET, F. M. (1950.) **The haemolytic action of Newcastle disease virus. I. The two types of interaction between virus and red cell.**—*Aust. J. exp. Biol. med. Sci.* **28.** 299–309. [Author's summary copied *verbatim.*] **1378**

Newcastle disease virus, NDV, has two characteristic modes of action on fowl or human erythrocytes. Type 1 action corresponds to that of most influenza viruses, reversible adsorption associated with enzymic destruction of receptors and elution. This is shown to varying extent under all the conditions which allow recognizable interaction between virus and cell surface and is the only type shown below 25° C. or by virus heated between 54° C. and 58° C.

Type 2 action, irreversible union of virus to the cell receptors, is observed only with active unheated virus, acting on cells at a temperature above 24° C. (human cells) or 28° C. (fowl cells). The same conditions are necessary for the manifestation of three other actions of NDV on red cells, haemolysis, abnormal reduction in electrophoretic mobility and extension of haemagglutinin titre at 37° C.

The phenomenon of extension of titre at 37° C. described by Anderson [*V.B.* **18.** 795] is probably due not to disaggregation but to the gradual development of Type 2 virus-cell unions.

MARMION, B. P. & STOKER, M. G. P. (1950.) **Q fever in Great Britain. Epidemiology of an outbreak.**—*Lancet.* **259.** 611–616. [Authors' summary copied *verbatim.*] **1379**

The epidemiological investigation of an outbreak of Q fever at the Royal Cancer Hospital, London, is described. The outbreak comprised two apparently unconnected episodes, the first consisting of four cases in July, 1949, and the second of two cases in September, 1949. In the first episode a nurse, two pathologists, and a mortuary attendant were apparently infected during the terminal illness and at the necropsy of an unrecognized case of Q fever. In the second episode, two months later, another member of the staff and his wife were infected while on holiday in Devon.

The fatal case of Q fever came from N.E. Kent, and the patient may have been infected there by the consumption of raw milk, which was shown to contain *R. burneti.* Other investigations, by the detection of more cases of Q fever and the demonstration of antibodies in farm workers and cattle, have shown that parts of Kent and Devon are areas where Q fever is endemic.

STOKER, M. G. P. (1950.) **Q fever in Great Britain. The causative agent.**—*Lancet.* **259.** 616–620. [Author's summary copied *verbatim.*] **1380**

Two strains of *R. burneti* isolated in Great Britain have been studied under laboratory conditions. The Christie strain was obtained from a patient and the Ml strain from a pool of raw milk collected in an endemic area. These strains have been compared with the classical Henzerling strain isolated from a patient in Italy. In their morphology, size, and general behaviour in g. pigs and fertile hen's eggs the British strains resembled the classical strain. There was also reciprocal cross-immunity between all three strains in g. pigs.

Minor differences between the strains were detected. Judging by incubation period and length of fever, the British milk strain was more pathogenic for g. pigs and also adapted itself more rapidly to growth in fertile eggs than the human strain. Even after adaptation to eggs, however, the British strains took longer to kill the embryos than the classical strain.

Complement-fixation tests showed that antigens made from the classical strain reacted with antisera against British strains. These British antisera, however, would not react with antigens made from either British strain until the strains had undergone several yolk-sac passages. This effect was not related to the numbers of rickettsiae in the antigens and suggested a change in antigenic structure during egg adaptation.

GUTSCHER, V. & NUFER, K. (1948.) Über eine Queensland-fever-Endemie in Bremgarten. (Kt. Aargau). [**Q fever in Switzerland.**]—*Schweiz. med. Wschr.* **78.** 1064. **1381**

Fifty-nine out of 107 men working in a furniture factory fell ill with Q fever. Patients were tested by complement fixation and the majority yielded positive titres. One labourer suffering from influenzal pneumonia and the remaining healthy men had negative titres. The outbreak lasted for about five weeks.—E. G.

NAUCK, E. G. & WEYER, F. (1949.) Laboratoriumsinfektionen bei Q-Fieber. [**Laboratory infections with Q fever.**]—*Dtsch. med. Wschr.* 198–202. **1382**

An epidemic of Q fever which occurred in 1947–48 in the Hamburg institute for tropical medicine is described. The diagnosis was confirmed in seven laboratory workers.

Tracheal sputum and whole blood of patients were injected intraperitoneally into mice; g. pigs were inoculated with whole blood and subsequent passages were made in mice and in ticks; ticks and lice were allowed to feed on patients and the agent was passaged in mice. By these methods it was possible to demonstrate the agent in four of the seven patients by microscopic examination of the spleen of the mice. It is believed that the patients became infected by inhalation of infected dust. This theory appeared to have been confirmed weeks later, when two further men fell ill after entering the laboratory which had been kept closed after the first outbreak.

—E. G.

SIEGERT, R., SIMROCK, W. & STRÖDER, U. (1950.) Über einen epidemischen Ausbruch von Q-Fieber in einem Krankenhaus. I. Klinik und Laboratoriumsdiagnose. II. Epidemiologie. [**An epidemic of Q fever in a hospital. I. Clinical aspect and laboratory diagnosis. II. Epidemiology.**]—*Z. Tropen. Parasitol* **2.** 1–40. [Absts. from English summaries.] **1383**

I. During an epidemic outbreak of Q fever in the Medical Clinic of the University of Frankfort, 38 cases were studied and in consequence, 7 cases of laboratory infection occurred at the Paul-Ehrlich-Institute in Frankfort.

In the analysis of clinical course and symptoms the less known facts and complications were stressed. Coincidence of Q fever and other diseases was mentioned. One case of encephalitis following Q fever and three other cases of protracted and grave illness were described in detail. The favourable action of aureomycin on Q fever was confirmed in three cases.

In 40 cases diagnosis was confirmed by animal experiments and serum tests. Conditions were especially favourable for a detailed study of the transmission of the organism and the spread of the epidemic.

II. A hospital epidemic of Q fever was definitely traced to a human carrier, a laboratory assistant who had become infected while working with a virus strain of "Balkan grippe" and suffered from chronic Q fever pneumonia. The organism was excreted with the sputum. Infection was spread by direct inhalation of droplets and dust. In addition, there were some cases in which infection could be explained only by indirect contact or other carrying agents. In spite of continuous excretion of the organism in the sputum for nearly 5 months, the carrier proved infective only during the febrile stage of nearly 2 months' duration. This fact is remarkable and not easily explained. Persons or groups of persons became infected according to the frequency of contact with the carrier. The authors believe that a patient suffering from Q fever is not always necessarily a source of infection.

SCHUBOTHE, H. (1949.) Die südbadische Fieberepidemie im Frühjahr, 1948. [**Q fever in South Germany.**]—*Klin. Wschr.* **27.** 230–232. **1384**

The clinical picture of an epidemic in South Baden during the early spring of 1948 is discussed. Whether or not ectoparasites played a role in the transmission could not be established. There was evidence of direct infection from man to man which left some doubt that it really was Q fever.—E. G.

ANON. (1950.) **"Q" fever.**—*Calif. Vet.* **3.** No. 6. p. 26. **1385**

This is a note on the incidence of Q fever in farm animals in California. In the Los Angeles area, predominantly dairying, the incidence is approximately 15% in dairy cattle, beef cattle in the area being apparently negative. In the north Central Valley area, with a heavy sheep concentration the incidence is 15% in sheep and

only 2% in cattle. The northern counties are apparently free from the infection. The disease has remained confined to the areas in which it was first reported.—A. FOGGIE.

BELL, J. A., BECK, M. D. & HUEBNER, R. J. (1950.) **Epidemiologic studies of Q fever in Southern California.**—*J. Amer. med. Ass.* **142.** 868–872. [Authors' summary modified.] **1386**

The complement fixation test used was shown by epidemiologic study to be highly specific for recent infection with *Rickettsia burneti*. The test used was of low sensitivity and reflected only part of the total past infections which had occurred.

Q fever has been occurring endemically in the Los Angeles area for several years, and it is highly probable that more than 50,000 persons have been infected with *R. burneti* during recent years. It appears that a sizable proportion of these infections caused many persons to have an acute illness, with fever for two or more days which was not heretofore recognized as Q fever.

The most frequent and by far the most important sources of human infection were local dairy cows, their very young calves and some of their raw products, particularly raw milk and hides.

The persons most apt to have been infected were those who had used raw milk in their households, those whose residence had been located near a dairy or live-stock yard, those who had worked in industries handling live or recently killed local dairy cows and young calves, e.g. employees in dairies, in meat-packing plants and fat-rendering plants, and employees handling the raw products of such animals, e.g. employees of creameries and hide plants.

KOERBER, W. L., GREENSPAN, G. & LANGLYKKE, A. F. (1950.) **Observations on the multiplication of phages affecting** *Streptomyces griseus*.—*J. Bact.* **60.** 29–37. [Authors' summary slightly modified.] **1387**

A number of criteria were discussed which differentiate the actinophage preparations dealt with into at least two types. These types can be distinguished by host specificity, plaque morphology, and size. The authors also noted a quantitative difference between the two types in their inactivation in distilled water and protection against such inactivation by the incorporation of calcium salt in the diluent. Strains of *Streptomyces griseus* resistant to both phage types were obtained, although with much greater ease for type I than for type II.

See also absts. **1405** (*Rickettsia* infections of lice); **1454–1455** (animal diseases transmissible to man); **1457** (equine encephalomyelitis); **1495** (virus diseases); **1568** (report, U.S.A.); **1569** (book, microbiology).

IMMUNITY

BASSET, J. (1950.) Artifices employés dans l'immunisation. Réaction locale. Adsorbants. Voie d'introduction. [**Artifices employed in immunization.**]—*Rev. Méd. vét. Lyon et Toulouse.* **101.** 337–355. **1388**

A discussion on the production of immunity in which B. seeks to foster one viewpoint by quoting published evidence. He recalls that Ramon noticed that antitoxin production was often better when an abscess had occurred at the site of inoculation. Ramon sought a substance which would not only cause local inflammation but would adsorb the immunizing agent so that the latter was slowly liberated. B. supposes Ramon to be incorrect in relating the efficiency of antitoxin production to the intensity of the local lesion.

Concerning soluble antigens it is maintained that those animals which produce an intense local lesion are more reactive generally and would be expected to produce more antitoxin. Furthermore some species seldom react locally to certain soluble antigens but nevertheless become immune. A chronic local lesion might wall the injection round and so prevent the escape of the antigen.

B. discusses some of the work on adsorbants as adjuvants to antigens, including that of Myers (olive oil), Schmidt (aluminium hydroxide), Glenny (alum) and Holt (aluminium phosphate). Tapioca produces an inflammatory lesion locally but does not adsorb soluble antigens effectively. It is therefore an unsuitable adjuvant. B. recommends that adjuvants should be selected by their power of adsorbing the antigen so that small injecting doses are possible.

Examples are quoted in immunization with virus antigens to show that immunity may result though no local lesion is detectable.

In discussing bacterial antigens the author remarks that the intravenous route for immunization is in many cases the most effective and is unaccompanied by any local reaction.

[This is an incomplete review of the subject; the criteria of satisfactory immunity are not established.]—G. FULTON ROBERTS.

RICE, C. E. (1950.) **The interchangeability of the complement components of different animal species. I. Literature survey.**—*Canad. J. comp. Med.* **14.** 369–379. [Author's summary copied *verbatim*.] **1389**

The early and more recent literature dealing with the complements of various animal species has been summarized. The conclusion has been reached that in order to determine whether the components of the complements of different animal species are mutually interchangeable in the haemolytic reaction, other systems in addition to sheep red cells sensitized with rabbit amboceptor should be employed. Examination of this literature has also suggested that tests of compatibility of the components in some other complement phenomenon, as for example conglutination or fixation by specific precipitates, will provide useful supplementary information.

SHERMAN, W. B., MENZEL, A. E. O. & SEEBOHM, P. M. (1950.) **The role of non-precipitating antibodies in the passive sensitization of human skin by rabbit anti-ovalbumin.**—*J. exp. Med.* **92.** 191–200. [Authors' summary copied *verbatim.*] **1390**

Sera of fourteen rabbits injected with alum-precipitated recrystallized ovalbumin, containing 0·046 to 0·604 mg. of precipitable antibody nitrogen per ml. (average 0·299 mg.), passively sensitized human skin, while the sera of nine rabbits injected with dissolved recrystallized ovalbumin, containing from less than 0·05 to 0·420 of antibody nitrogen per ml. (average 0·176 mg. or less), were inactive in human skin. The skin-sensitizing activity of the sera bore no relation to the precipitin content.

Removal of 68 to 90% of the precipitin nitrogen by a single addition of antigen did not affect the activity of the sera in sensitizing human skin.

Removal of all precipitable antibody nitrogen in one serum by a single addition of antigen removed the skin-sensitizing activity.

The " univalent " antibody remaining after complete removal of precipitin by fractional addition of antigen showed the same activity in passive sensitization of human skin as the original serum.

WOODRUFF, M. F. A. & FORMAN, B. (1950.) **Evidence for the production of circulating antibodies by homografts of lymphoid tissue and skin.**—*Brit. J. exp. Path.* **31.** 306–315. [Authors' summary copied *verbatim.*] **1391**

By studying the variations in the absolute lymphocyte count of black and white rats following injections of serum from normal Wistars and from Wistars which had received previous homografts of either skin or lymph-node, evidence has been obtained which suggests that such homografts lead to the formation of circulating antibodies. The findings are consistent with the conclusion of Medawar that there exists an antigen common to leucocytes and skin, and suggest that this antigen is present in the lymphocytes rather than in the polymorphs. A standardized method is described for making leucocyte counts in rats.

SIMONSEN, M. & CHRISTENSEN, R. (1950.) **Heteroplastic parabiotic intoxication. Antibody formation. Treatment with antihistaminica.**—*Acta path. microbiol. scand.* **27.** 325–337. [In English, authors' summary slightly modified.] **1392**

The authors report on 27 parabiosis operations in which mice were united with rats (coelioanastomosis). In all cases the mouse died first. Death occurred from the 4th to the 16th day after the operation. The animals contained no preformed agglutinins against erythrocytes from the other partner. After two or three days it was possible to demonstrate mutual antibody formation by means of agglutination tests with serum from one animal and corpuscular suspension from the other. Injection of an antihistamine compound three times daily caused no definite prolongation of the animals' lifetime.

HOSODA, T. & KANEKO, T. (1950.) **[Studies on the group-specific substances in the ass saliva.]** —*Jap. J. vet. Sci.* **12.** 51–68. [Abst. from English summary.] **1393**

The saliva of all the donkeys tested absorbed both anti-O_1 and anti-O_2 agglutinins well. When donkey saliva was injected into fowls, anti-O_1, anti-O_2 and anti-O_3 agglutinins were formed. The O-substance is therefore secreted in donkey saliva, its antigenic structure being O_1 O_2 O_3.

The saliva of all the donkeys tested absorbed α-agglutinin well. Four kinds of anti-A agglutinins were generally absorbed well, but the saliva of one donkey, four months old, differed from the other samples in its absorption of anti-A_1. The antigenic structure of the A-substance secreted in donkey saliva was found to be in general A_I, A_{II}, A_{III}, A_{IV}.

β-agglutinin was usually absorbed well. The saliva of some donkeys absorbed anti-B_1 agglutinin well, that of a few donkeys absorbed it very slightly, but all the samples tested absorbed anti-B_2 and anti-B_3 agglutinins well. There were two types of donkey saliva, one containing B_1 B_2 B_3 and the other containing B_2 B_3.

Because the C-specific substance is always co-existent with the A- and B-specific substances, its antigenic structure must be C_1 C_2 C_3.

MICHELAZZI, L. (1950.) Nucleoproteidi e produzione degli anticorpi. **[Nucleoproteins and production of antibodies.]**—*Boll. Ist. sieroter. Milano.* **29.** 28–34. [English summary modified.] **1394**

After studying the problem of the formation of antibodies, the author found that the introduction of nucleoproteins, isolated from the liver of rabbits immunized against *Staphylococcus pyogenes aureus* and against *Escherichia coli*, induced the production of agglutinating antibodies against the micro-organisms used in the treated animals. It was not possible, however, to induce the formation of antibodies against the red cells, under the same experimental conditions. Also, the mitochondria, to which a great part of the cellular ribonucleic acid is fixed, showed a phenomenon identical with that of the nucleoproteins.

It was found that bacterial multiplication measured with the Warburg manometer and with nephelometric methods, is not influenced by the presence of nucleoproteins isolated from the liver of animals immunized against the corresponding micro-organisms, the mitochondria, under the same experimental conditions, showed slight inhibitory action on bacterial multiplication. The mitochondria, isolated from the liver of normal rats and rabbits, on the contrary, produced an increase of bacterial growth.

BAILLY, M. D. (1950.) **Acquired immunity in rabbits to infection with group A type 30 hemolytic streptococcus: its relation to antibodies to the M protein.**—*J. Immunol.* **64.** 245–256. [Author's summary and conclusion copied *verbatim.*] **1395**

One one-thousandth of a milliliter of a blood broth culture of hemolytic streptococcus Type 30, Gay strain, when injected intrapleurally in rabbits is uniformly fatal to normal animals (18/18).

This same strain of streptococcus injected subcutaneously at the angle of the jaw produces a severe local infection, but the majority of animals survive and develop antibodies to one or more of the antigens of this strain.

When anti M precipitins and skin sensitivity develop, animals are usually protected against subsequent intrapleural infection with the same organism (11/14).

When anti M precipitins and skin sensitivity do not develop, animals die of subsequent intrapleural infection (7/7).

When anti M precipitins and skin sensitivity are *partially* neutralized by previous intravenous injection of M antigen, animals usually survive reinfection (3/5).

When anti M precipitins and skin sensitivity are completely neutralized by previous intravenous injection of M antigen, animals usually die following subsequent infection (10/11).

On the other hand, when anti C precipitins and skin sensitivity are neutralized by intravenous injection of Group A "C" antigen, previous to challenge, the immunity of the animals is usually unaffected and they resist intrapleural infection with the streptococcus (7/8). In all eight of these animals M antibodies still remained.

Antibodies and skin sensitivity to the nucleoprotein C18K appear irregularly and without relation to immunity.

In rabbits immunized to Type 30 hemolytic streptococcus, intravenous injection of M protein selectively depresses the circulating anti M precipitin, the skin sensitivity to M protein, and the immunity to infection by the Type 30 streptococcus. Intravenous injection of Group A "C" carbohydrate selectively depresses the anti C precipitin and the skin sensitivity to C but leaves the antibody and skin sensitivity to M unaltered and the immunity to infection with the Type 30 streptococcus intact. The relation of allergy to immunity in hemolytic streptococcus infection can be considered only when allergy to the M protein is measured. Allergy to the Type 30 M protein is correlated with immunity to infection with this organism.

ALEXANDER, M. M. (1950.) **A quantitative antibody response of man to infection or vaccination with *Pasteurella tularensis*.**—*J. exp. Med.* **92.** 51–57. [Author's summary and conclusions copied *verbatim.*] **1396**

A polysaccharide antigen, prepared from a virulent strain of *Past. tularensis* by phenol extraction, was employed in assaying the antibody in sera from persons recovered from infection with, or vaccinated with *Past. tularensis*, using the serological technique of quantitative precipitation.

Antibody levels in sera of individuals vaccinated with or recovered from infection with *Past. tularensis* were found to resemble those observed in similar studies by other investigators, such as the antibody response to pneumococcal antigen, meningococcal polysaccharide, and blood group substances.

It is suggested that the value of actively or of passively acquired antibody to an individual exposed to tularemia is dependent not on the amount of antibody alone, but also on the amount of antigen with which the antibody is capable of combining.

YOUNG, G. A., Jr. & UNDERDAHL, N. R. (1950.) **Neutralization and hemagglutination inhibition of swine influenza virus by serum from suckling swine and by milk from their dams.**—*J. Immunol.* **65.** 369–373. [Authors' summary copied *verbatim.*] **1397**

A study was made on milk from three dams and serum from their 28 pigs for the relationship of antibodies capable of neutralizing or causing hemagglutination inhibition of swine influenza virus. Both neutralizing and hemagglutination-inhibiting antibodies were present in the colostrum of the dam in high titer, but the titers dropped considerably during the first four weeks. Thereafter the rate of loss was less rapid. Neither antibody was found in the serum of the newborn pig prior to nursing, but both were present in the serum in high titer within 30 hours. The loss of titer in the serum after 30 hours was gradual over an 8-week period.

GLEESON-WHITE, M. H., HEARD, D. H., MYNORS, L. S. & COOMBS, R. R. A. (1950.) **Factors influencing the agglutinability of red cells: The demonstration of a variation of the susceptibility to agglutination exhibited by the red cells of individual oxen.**—*Brit. J. exp. Path.* **31.** 321–331. [Authors' summary copied *verbatim.*] **1398**

A property of the red cells of certain oxen has been observed which renders the sensitization of these cells by infectious mononucleosis sera and guinea-pig and rabbit anti-ox red cell sera undetectable by the anti-globulin sensitization test, although they are fully susceptible to lysis in the presence of guinea-pig complement.

The sensitization of this "inagglutinable" class of ox red cell can be detected by treatment with trypsin.

DE VOS, N. (1948.) De Rhesus-factor en zijn betekenis in de Diergeneeskunde. **[The Rh factor and its significance in veterinary medicine.]** —*Vlaam. Diergeneesk. Tijdschr.* **17.** 2–5. **1399**

A discussion of the literature dealing with the blood groups in general and with the pathogenesis and treatment of icterus neonatorum in mule foals. No new information.

—P. L. LE ROUX.

LEHNERT, E. (1949.) Ein weiterer Beitrag zur Frage der Existenz von Autoisoantikörpern im Pferdeblut. (Autoisoantikörper im Blute der O-Gruppe.) **[The existence of auto-isoantibodies in horse blood.]**—*Nord. Vet.-Med.* **1.** 312–323. [Abst. from English summary.] **1400**

The presence of auto-isoantibodies was ascertained in the O-group, using an isotonic reaction medium low in salt. As these antibodies are bound not only by O erythrocytes but by the red cells of the other three groups, it is assumed that there is a factor (called I) common to all the blood groups. The blood of horses was compared with that of human beings in respect of auto-agglutination.—JAS. G. O'SULLIVAN.

COOMBS, R. R. A., GORIUS, J. & BESSIS, M. (1950.) Diagnostic de l'ictère hémolytique des muletons, par le test a l'antiglobuline. **[Diagnosis of haemolytic jaundice in mule foals by the antiglobulin test.]**—*C. R. Soc. Biol., Paris.* **144.** 688–691. **1401**

In haemolytic disease of the new-born mule foal the direct agglutination test may not suffice for diagnosis. In some cases the result may be obscured by pseudo-agglutination and in others the immune antibody may be an "incomplete" or non-agglutinating form. Cells which are sensitized with antibody may, however, be detected either by suspension in 20% bovine albumin or by use of the antiglobulin test. For the latter, antiserum must be prepared by immunizing rabbits with horse serum. The antiserum so prepared must be absorbed with six times washed horse cells and similarly with mule cells. The anti-horse-globulin serum may then be applied to thrice washed red cells from the animal suspected of haemolytic disease. If the cells are sensitized agglutination will result. Both the antiglobulin and albumin tests were positive in 12 cases of haemolytic disease and negative in 19 mule foals with other diseases.

—G. FULTON ROBERTS.

CRONIN, M. T. I. (1950.) **Haemolytic disease in foals.**—*Irish Vet. J.* **4.** 138–145. **1402**

A general account of the disease, with emphasis on its genetics and pathogenesis. In discussion on the paper, reference was made to some gynaecological problems in the mare.

—ROY MACK.

BERTANI, L. (1950.) La "malattia emolitica del neonato" in patologia comparata. **[Haemolytic disease of new-born in comparative pathology.]**—*Riv. Med. Vet. Zootec.* **2.** 51–70. **1403**

A review of the comparative pathology of haemolytic disease of new-born horse and mule foals. A number of continental and some American papers and books are discussed, but no original work is included nor are any original conclusions reached.—R. MACGREGOR.

See also absts. 1255 and 1265 (TB.); 1266–1267 (BCG); 1268–1270 (tuberculin, johnin); 1271 (killed swine erysipelas vaccine); 1272 (*Past tularensis*); 1277 (*S. gallinarum* agglutination test); 1281 (vaccines); 1282 (strain 19); 1316 (complement-fixation test for trichomoniasis); 1335–1339. (F. & M. disease); 1341, 1344–1345 and 1348–1350 (rabies); 1351 (fowl pox); 1352 (smallpox); 1353 (equine influenza); 1358 (influenza virus haemagglutination); 1364 (swine fever); 1368 (fowl plague); 1375–1377 (Newcastle disease); 1484 (whooping cough vaccine).

PARASITES IN RELATION TO DISEASE [GENERAL]

JAREŠ-GOETZ, J. (1948.) Parasitární nemoci zvířat ve vztahu k zdravotním poměrům venkova. **[Parasites in relation to disease in rural districts.]**—*Čas. československ. Vet.* **3.** 271–277. **1404**

A general discussion on conventional lines of the role of arthropod and helminth parasites in relation to disease in domesticated animals in rural districts.—E. G.

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

WEYER, F. (1950.) Beobachtungen bei intracölomaler Infektion von Läusen mit *Rickettsien.* **[Observations in intracoelomary *Rickettsia* infections of lice.]**—*Z. Tropen. Parasitol.* **2.** 40–51. [Abst. from English summary.] **1405**

Female as well as male lice can be infected with rickettsia by introducing material into the coelom. When fine glass capillaries are used with a suitable technique, mortality of lice does not exceed mortality connected with intrarectal infection.

Intracellular and extracellular rickettsia multiplied in 24 out of 26 experiments. Proof of this was found in smears of faeces and organ tissues, also in tissue sections and by inoculating crushed organs into lice and into mice.

Following intracoelomary infection rickettsia multiplied in the stomach, in the same way as after intrarectal infection, natural or artificial. Rickettsia did not multiply in other organs.

Under certain conditions rickettsia may settle and multiply within the female sex glands, especially in the follicular cells whence they enter the ova. Such lice lay ova containing rickettsia. The ova develop normally. In first-stage larvae the presence of rickettsia could be proved by various methods.

These findings do not indicate that the intracoelomary method yields a better crop of rickettsia or that the first generation in rickettsia strains becomes automatically infected. They contribute to knowledge of the biology of rickettsia, however, and tend to prove that embryonic and undifferentiated cells with intensive metabolism offer favourable conditions for the development of rickettsia.

ARTHUR, D. R. (1949.) **The scutum of the tick,** *Ixodes ricinus L.—Parasitology.* **39.** 235–240. **1406**

Variations in size, form, chaetotaxy and colour of the scuta of larval, nymphal and adult *I. ricinus* are considered. The increase of adult scutal dimensions over those of the nymph, and of the scutal dimensions of the nymph over those of the larva are not constant. Increase in size causes a change in form. The change in form of the adult male scutum from immature stages is marked, but a corresponding change in the female is not so obvious. The chaetotaxy of the mature scutum is distinctly different from that of the larva. Three types of setae are recognized. In females and nymphs there is lack of uniform colouration, the anterior angle being generally darker than the rest of the scutum. In larvae, apart from well defined areas, there is evenness of pigmentation.—JAS. G. O'SULLIVAN.

ARTHUR, D. R. (1948.) **On the egg of the tick,** *Ixodes ricinus* L.—*Parasitology.* **39.** 53–60. **1407**

The development of the egg of *Ixodes ricinus*, is described in detail, together with reference to the eggs of *I. hexagonus*, and *I. canisuga.* The egg increases in size, up to the 35th day. Development and hatching of the larvae requires a humidity of 80%. The formation of the larva within the egg, and the mechanics associated with its emergence from the egg, are described. After emergence the larva remains quiescent for 5–10 days, during which time the gut undergoes a series of changes simultaneously with the process of excretion, and the chitinous integument becomes hardened.—D. W. JOLLY.

NUTTING, W. B. (1950.) **Studies on the genus** *Demodex.* **Owen (Acari. Demodicoidea. Demodicidae.)**—*Thesis, Cornell.* pp. 161. **1408**

A comprehensive study of the genus *Demodex* in large and small animals. The text is excellently illustrated and well documented.

—H. L. GILMAN.

See also absts. **1404** (parasites of farm animals); **1575** (book, mosquitoes).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

VOGELSANG, E. G. & GALLO, P. (1949.) Contribucion al estudio de la parasitologia animal en Venezuela. **[Two new species of sparganum found in Venezuela.]**—*Rev. Med. vet. Parasit., Caracas.* **8.** 79–82. [English summary.] **1409**

The authors described the morphology of two new species of *Sparganum*, *S. fernandezi*, found in the peritoneum and abdominal wall of

the goat, and *S. ameivae*, found free in the peritoneal cavity of a small lizard (*Ameiva ameiva*).—I. W. JENNINGS.

MARTINAGLIA, G. & BRANDT, F. A. (1947.) **Cysticercosis of the impala or rooibok (*Aepyceros melampus*) with reference to meat hygiene.** —*J. S. Afr. vet. med. Ass.* **18.** 20–27. **1410**

The authors record the recovery of intramuscularly situated cysticerci, armed with hooks, from the blue wildebeest (*Connochates taurinus*) and the impala or rooibok (*Aepyceros melampus*). In eight "measly" impala the elbow muscles were primarily infected. When the carcasses were cut up cysts were encountered in the shoulders and gluteal muscles in all cases; in the tongue once, in the psoas muscles once and in the intercostals twice. Attention is drawn to the possibility that these cysticerci may occur in cattle and may explain the recovery of the armed cystericercus from an ox by Martinaglia in 1937. Cysticerci from animals shot 3–4 days previously were fed to a two-year-old dog but failed to develop into adult worms. Because the hooks on the rostellum of the cysticerci from the impala were not identical with those of any of the tapeworms hitherto described from man and carnivores the authors propose the name *Cysticercus impalae* for the larval stage of the unknown adult tapeworm. Infected carcasses were condemned as unfit for human consumption, seized and destroyed because no information was available as to how long the cysts would remain viable under chilling and freezing conditions.

—P. L. LE ROUX.

LEVINE, N. D., MILLER, L. J., MORRILL, C. C. & MANSFIELD, M. E. (1950.) **Nematode dermatitis in cattle associated with *Rhabditis*.**—*J. Amer. vet. med. Ass.* **116.** 294–296. **1411**

Three cases of nematode dermatitis associated with *Rhabditis* sp. in dairy cattle are described. The principal lesions on the neck, abdomen and udder were thickening, scurfiness and wrinkling of the skin with pustules up to 1 cm. in diameter which contained adult and larval nematodes.—GEORGE M. URQUHART.

ERSHOV, V. S. (1949.) **[Life cycle of *Strongylus* (*Delafondia*) *vulgaris* in horses.]**—*Veterinariya, Moscow.* **26.** No. 8. pp. 26–28. **1412**

E. studied the life cycle of *S. vulgaris*, especially its route of migration through the body. He states that the larvae, after penetrating the colon, migrate between the muscular and the serous coats, then between the coats of the mesentery to the base and into the lumen of the mesenteric artery. Here they mature inside a thrombus and, emerging as adults after 6–7 months, are carried by the blood stream back into the colon wall, collecting in masses the size of a pea or bean; after a short while they emerge into the lumen, adhering to the mucous membrane. Some of the larvae again penetrate the intestinal wall and are carried by the adjacent blood vessels into the liver where they die. Others enter the mesentery *via* the lymphatic vessels and also die. But in heavy infestations access is also gained into the branches of the mesenteric artery where aneurysms are produced.

Experimental data are given, numbers, size, development, seasons, the duration of different stages and other details. Several photographs illustrate the migration of the larvae.—F. A. A.

DELAUNE, E. T. & MAYHEW, R. L. (1943.) **Studies on bovine gastro-intestinal parasites. VI. The blood picture in stomach worm (*Haemonchus contortus*) infections.**—*Trans. Amer. micr. Soc.* **62.** 179–193. [Abstracted from authors' summary. For previous parts, see *V.B.* **11.** 168 & 375; **12.** 39; & **13.** 57.] **1413**

A detailed description of the blood picture of six calves dosed with *Haemonchus contortus* larvae.

The erythrocytes decreased beginning five to seven days after administration of the infective larvae from approximately 10,000,000 to as low as 2,500,000 toward the end of the prepatent period. The hemoglobin determinations followed the same trend as the erythrocyte counts, decreasing from a pre-dosage level of approximately 60% (8·7 gm.) to as low as 10% (1·45 gm.) or less toward the end of the prepatent period. The total leucocytes may increase to as much as 7,000 for a period of eight to 14 days beginning 5–7 days after dosage followed by a rapid drop to as low as 1,750 toward the end of the prepatent period.

Following the prepatent period the total erythrocyte, hemoglobin, and total leucocyte counts gradually increased toward the pre-dosage levels and single counts much greater than the pre-dosage levels or those in the control animals could be obtained.

The most outstanding changes in the differential percentages were a decrease in lymphocytes and an increase in monocytes. Eosinophile percentages did not increase beyond 7·5%.

The range of variation between different counts of all types was much greater in each calf following dosage than in the pre-dosage period or in the controls.

The fact that the changes described occurred during the prepatent period showed that injury

is done to the host during the larval period as well as the adult period of the parasite.

I. & II. MAYHEW, R. L. (1948.) **Studies on bovine gastrointestinal parasites. X. The effects of nodular worm (*Oesophagostomum radiatum*) on calves during the prepatent period. XI. The life cycle of the hookworm (*Bunostomum phlebotomum*) in the calf.**—*Amer. J. vet. Res.* **9.** 30–34 & 35–39. [Author's summaries copied *verbatim*. For parts VII–IX, see *V.B.* **15.** 191 & 328. **1414**

I. Data are presented on 5 calves that were inoculated with pure cultures of infective nodular worm larvae under parasite controlled conditions, which show that the symptoms generally associated with parasitism develop during the prepatent period.

Diarrhea developed as early as the seventh day and as late as the seventeenth day after inoculation and continued as long as nineteen days. There followed periods of intermittent diarrhea, lasting as long as eighteen days in some of the experiments.

The appetite began to be affected as early as two to five days after receiving the infective larvae.

Loss in weight, severe emaciation and general weakness were associated with the diarrhea. The general condition improved with the beginning of egg production by the parasites.

Two animals developed an immunity, as was evidenced by a rapid drop in egg count and failure to become reinfected upon reinoculation.

The effects of severe parasitism seem to persist for a long time in some individual animals, as suggested by the death of 2 animals under adverse environmental conditions five and twelve months after the development of symptoms.

The improvement in general condition, following the maturing of larvae, suggests that treatment at this time had less influence than is generally supposed, while the improvement was mainly the result of the natural course of the infection. However, the removal of adult parasites by administering a suitable anthelmintic to infected animals that are able to withstand treatment is extremely desirable, since, in so doing, the egg and larval population of the premises is reduced. This reduces the danger of loss from heavy larval infection of the next generation of calves and the reinfection of the present generation of calves.

II. Inoculation experiments were carried out under controlled conditions of infection in which 5 calves became infected by placing hookworm larvae on the skin. Four of these were placed in stanchions in such a manner that they could not lick any portion of the body. Three animals were inoculated by mouth, and 3 are described which are believed to be natural infections. Diarrhea of varying degrees of severity developed in 4 of those infected by skin and in 1 infected by mouth. The periods of diarrhea lasted from ten to twenty-two days and began from the twenty-seventh to the thirty-eighth day after inoculation. In 1 animal, there was a period of intermittent diarrhea lasting twenty-eight days following a period of eighteen days of the severe type.

One calf died on the sixty-first day following inoculation, eggs having been found only on five days preceding death and following a period of diarrhea lasting twenty-two days. Eggs were recovered from the feces as early as the fifty-seventh day.

Larvae were recovered from the lungs of 2 calves that were slaughtered following inoculation by placing larvae on the skin.

All the symptoms observed occurred during the prepatent period of the infection. A general improvement was observed following maturing of the larvae into adults.

The above observations emphasize the importance of barn and shade sanitation in controlling hookworm infection in calves.

MAYHEW, R. L. (1949.) **Studies on bovine gastro-intestinal parasites. XII. Additional infection experiments with the hookworm (*Bunostomum phlebotomum*) in the calf.**—*J. Parasit.* **35.** 315–321 **1415**

Nine calves were infected with the larvae of *B. phlebotomum* by placing them on the skin. Eggs first appeared in the faeces 52–68 days after infection. One animal died apparently as a result of hookworm infection. Severity of symptoms was not correlated with the number of eggs passed in the faeces.—J. F. A. SPRENT.

KRUG, E. S. & MAYHEW, R. L. (1949.) **Studies on bovine gastro-intestinal parasites. XIII. Species diagnosis of nematode infections by egg characteristics.**—*Trans. Amer. micr. Soc.* **68.** 234–239. **1416**

The authors recorded the measurements of the eggs of the nematode species which occur most commonly and are of greatest economic importance in Louisiana. On the basis of size, shape and shell characters they could be placed in four groups, *Cooperia* sp., *Haemonchus*, *Oesophagostomum* and *Bunostomum*. In the first group, which included *Cooperia*, *Ostertagia* and *Trichostrongylus*, the shape of the eggs was elongate-oval, the sides being somewhat flattened.

The sides of *Haemonchus* eggs were slightly more curved and most of the eggs were wider than those of the *Cooperia* group. It was very difficult to distinguish *Oesophagostomum* eggs from those of the first two groups except by their size. The shells of the eggs of these first three groups were smooth, relatively thin and colourless. Those of *Bunostomum* could be differentiated from the other groups by their larger size, darker colour (brownish or brownish yellow) and thick, rough shell.—F. E. W.

MAYHEW, R. L. (1949.) **Studies on bovine gastro-intestinal parasites. XIV. *Haemonchus contortus* immunity experiments with injections of dried worm powder and immune blood serum.** —*Proc. helminth. Soc. Wash.* **16.** 19–23. **1417**

M. investigated the effect of artificial active and passive immunization on the development of *H. contortus* in young calves. Three calves were injected subcutaneously 9, 8 and 6 times respectively with a saline suspension of dried adult *H. contortus*. In two calves the course of the injections lasted 30 and 9 days respectively and injections were started within a few days of artificial infection. The third calf was infected both before and after the course of injection. No evidence of protection was observed as estimated by faecal egg counts and by worm counts at death. A calf intravenously injected with serum from another calf which four months previously had developed resistance to re-infection similarly failed to develop any degree of immunity.

—J. F. A. SPRENT.

TETLEY, J. H. (1950.) **The differentiation of the eggs of *Haemonchus contortus* and *Ostertagia* species of the sheep and a note on the relative generic egg-laying rates.**—*Parasitology.* **40.** 273–275. [Author's summary copied *verbatim.*] **1418**

In a mixed infection in which *Haemonchus contortus*, *Ostertagia circumcincta* and *O. trifurcata* predominated, the lengths were plotted against widths of eggs obtained from faeces.

Two-dimensional groups approximating to normal frequency distributions, showing little overlap, were observed.

The statistical ranges of means plus and minus twice the standard deviation for the two groups barely touched. These were, to the nearest micron, 68–84 by 41–51 for *Haemonchus contortus* and, for the *Ostertagia* group, 83–103 by 46–52.

DIKMANS, G. & MAPES, C. R. (1950.) **The lungworm, *Protostrongylus rufescens*, found in domestic sheep, *Ovis aries*, in the United States.** —*Proc. helminth. Soc. Wash.* **17.** 16–24. **1419**

Lungworms are reported and described for the first time from America, and identified as *P. rufescens*.—GEORGE M. URQUHART.

TURUNOVA, L. E. (1949.) **[Treatment of muelleriasis of sheep and goats with emetine hydrochloride.]**—*Veterinariya, Moscow.* **26.** No. 4. p. 43. **1420**

Ten goats and 12 sheep infested with *Muellerius capillaris* were given intramuscularly 0·003 g. per kg. of emetine hydrochloride, the treatment being repeated two days later. It is stated that examination of the faeces twelve days later indicated that 93·7% of the worms had been killed; two of the goats were then completely free of infestation.

A third treatment was given 25 days later to five of the goats, using two-thirds of the above dosage. As a result four of these goats were found to be free from worms when destroyed shortly afterwards. Six of the sheep were also given a third treatment with good results.

—F. A. A.

SEWELL, P. & HAWKING, F. (1950.) **Chemotherapy of experimental filariasis.**—*Brit. J. Pharmacol.* **5.** 239–260. [Authors' summary slightly modified.] **1421**

Two hundred and twenty substances have been examined for *in vivo* activity against the adults and microfilariae of *Litomosoides carinii*.

No activity against the adult worms has been discovered in 183 substances belonging to the following groups: amidines, *iso*thioureas, and amidoxines; sulphones; sulphonamides; derivatives of hydroxylamine; hydroxamic acids; pyridines; morpholines, a piperazine, a piperidinium, and an ethylene diamine derivative; pyrimidines; simple quinolines; *iso*quinolines simple benzthiazoles; benziminazoles and a benzoxazole; tetrazoles; thiazolines; xanthones and thioxanthones; benzepines miscellaneous dyes, and other miscellaneous compounds.

Some activity against adult worms has been found in all of the 18 compounds of antimony studied. Three of these—pentostam, methyl glucamine stibonate, and Sdt779—are outstanding, having therapeutic indices of 6, 10, and ?20 respectively.

Some activity against adult worms has been found in four of the twelve compounds of arsenic studied. Three of them—a derivative of *p*-benzamide arsenoxide (D324), neoarsphenamine, and a trivalent derivative of tryparsamide—have therapeutic indices of 4–8. Activity against adult worms has also been found in two compounds containing both antimony and arsenic.

Some activity against adult worms has been found in 23 of 35 anil-and styryl-quinolines and benzthiazoles and in two phenanthridinium salts and a cyanine dye. However, certain clinical trials on this type of compound have been discouraging.

Only one compound in the diguanide series, viz., proguanil, was found to be slightly active.

Of all the substances tested, only hetrazan [1-diethyl-carbamyl-4-methyl-piperazine] and N : N : N′-trimethyl-N′-diethylcarbamylethylene diamine affected the microfilariae directly.

See also absts. **1404** (parasites of farm animals); **1454–1455** (animal diseases transmissible to man).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

JEAN, R. & DAUDEL, R. (1949.) Epithelioma des sinus et des fosses nasales chez un cheval. **[Epithelioma of the sinuses of the head in a horse.]**—*Bull. Serv. Élev. Industr. anim. A.O.F.* **2.** Nos. 2–3. pp. 15–21. **1422**

A bulky squamous epithelioma, occupying both frontal sinuses and the right nasal cavities and maxillary sinuses of a 14-year-old Sudanese riding stallion, produced no respiratory or other symptoms, until it appeared externally as a swelling at the junction of the nasal and frontal bones in the mid-line. No metastases were found at slaughter.—E. COTCHIN.

FRIEDENWALD, J. S. (1950.) **Recent studies on corneal metabolism and growth: a review.**—*Cancer Res.* **10.** 461–466. **1423**

In definitions of a neoplasm, the notion is often incorporated of a tissue or group of cells escaping in some degree from the "normal" restraints of tissue growth and becoming "autonomous". Studies made by the author and by others, which are reviewed here, on the growth and metabolism of one of the simplest of organized mammalian structures—the cornea—have revealed a high degree of interaction of its components, and such studies, if continued and extended to other tissues, may provide a fuller insight into the organization of adult tissues, and the nature of the normal restraints of tissue growth.

Attention is paid to the metabolic organization of the cornea, with particular regard to the relationship between the epithelium and the connective tissue; to tissue cohesion, as between cell and cell in the epithelium, and between epithelium and connective tissue; to mitotic activity and karyorhexis in the epithelial cells; and to repair of the corneal epithelium.

—E. COTCHIN.

MÜHLBOCK, O. (1950.) **Note on the influence of the number of litters upon the incidence of mammary tumours in mice.**—*J. Nat. Cancer Inst.* **10.** 1259–1262. [Author's summary copied *verbatim.*] **1424**

In mice of the dilute-brown strain and their hybrids no difference in the incidence of mammary tumors could be demonstrated between virgins and biparous force-bred females. However, the average tumor-age of parous females was earlier. Force-bred females with more than three litters had a higher incidence of mammary tumors.

When determining the influence of pregnancy on the incidence of mammary tumors by comparison, the number of litters should be taken into account.

SILBERBERG, M. & SILBERBERG, R. (1950.) **Mammary growth in orchidectomized mice grafted with anterior lobes of hypophyses and ovaries at various ages.**—*Arch. Path.* **49.** 733–751. [Authors' summary copied *verbatim.*] **1425**

In male mice of strain A castrated at the age of 3 to 4 weeks, syngenesiotransplants of anterior lobes of hypophyses of ovaries or of a combination of the two types of glands stimulate cancerous and non-cancerous growth of the mammary glands in the order mentioned. The effectiveness of these grafts in relation to their survival has been discussed. Although stimulation of alveolar growth may be caused by all three kinds of grafts, it is most common after the combined transplantation of anterior lobes of hypophyses and ovaries. Alveolar growth is considered to be the result of an accentuation of ductal proliferation. Grafts made in 1 month old castrates cause more marked stimulation of mammary growth than similar grafts made in 7 month old castrates.

The increased growth processes of the mammary gland and the hemopoietic tissues showed no correlation in the various experimental groups, and the coexistence of mammary cancer and leukemia observed in 2 mice was considered to be a chance phenomenon. Two different sets of factors are therefore thought to be involved in mammary carcinogenesis and leukemogenesis, respectively, under the conditions of the present experiments.

KIRBY, A. H. & PEACOCK, P. R. (1949.) **Liver tumours in mice injected with commercial food dyes.**—*Glasg. med. J.* **30.** 364–372. [Abst. in *Bull. Hyg., Lond.* **25.** 147. (1950), copied *verbatim.* Signed: HAROLD BURROWS.] **1426**

Two dyes which are widely used in Britain for colouring margarine are "Oil Orange E" and "Oil Yellow HA". These were tested by the authors for carcinogenic potency on mice by subcutaneous injections given once every three weeks, the experiment lasting 14 months.

Among 24 mice treated in this way with Oil Orange E, hepatomas occurred in seven, tumours of the lung in four, and cancer at the site of injection in one. In ten of the remaining mice of this group lesions of the liver other than hepatomas were present. Oil Yellow HA seemed less potent as a carcinogen; among 34 mice to which it was given there occurred one hepatoma and one cancer at the site of injection, though hepatic lesions other than cancer were common. [The results surely justify the authors' contention that synthetic substances of no food value, sold for artificially colouring or flavouring of food, should be subject to stricter control.]

POLYA, J. B. & DUNN, P. (1950.) **The use of acetamide in the meiostagmin reaction.**—*Cancer Res.* **10.** 543–548. [Author's summary copied *verbatim.*] **1427**

The surface tensions of cancer and non-cancer sera were determined in progressive dilutions with 5% acetamide.

The difference between the initial and minimum surface tension values was found to be positive in pregnancy and most of the cancer samples, whereas it was negative in most of the other samples.

A conventional unit, the critical area, was defined and found to be positive in pregnant and most of the cancerous samples, whereas it was negative or slightly positive only in other samples.

The modified MR [meiostagmin reaction] is discussed from the point of view of the combination theory.

WUERTHELE-CASPÉ, V., ALEXANDER-JACKSON, E., ANDERSON, J. A., HILLIER, J., ALLEN, R. M. & SMITH, L. W. (1950.) **Cultural properties and pathogenicity of certain microorganisms obtained from various proliferative and neoplastic diseases.**—*Amer. J. med. Sci.* **220.** 638–648. [Authors' summary slightly modified.] **1428**

A group of morphologically similar microorganisms, varying considerably in size and shape, has been observed in and isolated from various proliferative diseases of man and animals, including scleroderma, human cancer, Rous sarcoma and mouse sarcoma 180.

These organisms, which appear primarily as small acid-fast granules in young cultures and which tend to become non-acid-fast in the larger forms present in old cultures, may exhibit a number of types, such as: (*a*) minute filterable granules beyond the limits of visibility of the light microscope; (*b*) larger granules approximately the size of ordinary cocci, readily seen with the light microscope; (*c*) later globoidal forms; (*d*) rod-like forms with irregular staining; and (*e*) occasionally globoidal forms which appear to undergo polar budding.

It has not been possible to recover the organism from 17 normal controls nor from patients suffering from any other condition.

Cultures inoculated into experimental animals produce a characteristic pseudocaseous lesion. Huge numbers of lymphocytes are called out as part of the response.

Final classification of these organisms cannot be made at this time. That they may represent isolated instances of a group of biologically related organisms capable of causing proliferation in the host is not overlooked.

Whether these organisms are of primary or secondary significance in the development of malignant disease remains to be established.

TAYLOR, S. G., AYER, J. P. & MORRIS, R. S. (1950.) **Cortical steroids in treatment of cancer.**—*J. Amer. med. Ass.* **144.** 1058–1064. [Authors' summary and conclusions slightly modified.] **1429**

Twenty-six patients with advanced neoplastic disease have been treated with pituitary adrenocorticotropic hormone (ACTH) or cortisone. The former was given in doses of 100 to 200 mg. daily, for individual periods of two weeks to three and one-half months. The latter was given in doses of 100 to 300 mg. daily for similar periods.

Temporary regression of neoplastic lesions was produced in 3 patients with Hodgkin's disease, 5 patients with lymphosarcoma and 1 patient with chronic lymphatic leukemia. A doubtful regression of angioendothelioma (Ewing's sarcoma) occurred with pituitary adrenocorticotropic hormone.

Patients with carcinoma, acute leukemia, myelogenous leukemia and melanoma showed no control of the neoplastic disease, but most patients manifested striking temporary improvement in their general condition.

Physiological alterations produced by these hormones given in large doses make repeated or prolonged therapy ill advised.

BRYAN, W. R., LORENZ, E. & MOLONEY, J. B. (1950.) **Studies on the effects *in vitro* of roentgen radiation on the biological activity of the agent of chicken tumor I (Rous sarcoma).**—*J. Nat. Cancer Inst.* **10.** 1215–1237. [Authors' summary copied *verbatim.*] **1430**

The relation between dose of X radiation and the surviving activity in irradiated samples of the agent of chicken tumor I (Rous sarcoma) was determined in 6 experiments carried out with quantitative bioassay techniques.

The characteristics of the dose-survival curve were found to vary with the method of preparation, and with the relative " purity ", of the tumor-agent suspension subjected to irradiation. The suspensions investigated ranged from crude extracts of tumor tissue to a microsome fraction which had been separated and partially " purified " by 2 cycles of differential centrifugation.

The diameter of the radio-sensitive structure of unit particles of chicken tumor I agent is estimated from the best results of this series of experiments to be 46–49 mμ. The possible implications of this finding with respect to internal structure of the unit particles are discussed.

Evidence is presented that aggregation of constituents of the microsome fraction with which the active tumor agent is associated may be responsible, at least in part, for the variations among dose-survival curves observed in the different experiments.

See also abst. **1458** (lymphatic leucosis in horses).

NUTRITIONAL AND METABOLIC DISORDERS

VAN DER WESTHUIZEN, G. C. A., OXFORD, A. E. & QUIN, J. I. (1950.) **Studies on the alimentary tract of Merino sheep in South Africa. XVI. On the identity of *Schizosaccharomyces ovis*. Part I. Some yeast-like organisms isolated from the rumen contents of sheep fed on a lucerne diet.**—*Onderstepoort J. vet. Sci.* **24.** 119–124. [Authors' summary and conclusions copied *verbatim.*] **1431**

All attempts by the usual mycological techniques to isolate *Schizosaccharomyces ovis*, have failed although other yeast-like organisms have been isolated, often in quantity, from rumen ingesta. None of these organisms have the charactersitic properties of *Schizosaccharomyces ovis* as present in sheep's rumen ingesta, viz. the power of quick fermentation of added glucose with simultaneous storage of massive amounts of glycogen in the cells. The rumen " yeasts " have also been shown not to be Mucor spores or oidia or yeast like forms of Monilia which they resemble in size and shape. From this and other evidence, it is concluded that *Schizosaccharomyces ovis* is misnamed and is probably not a member of the Eumycetes at all.

KENDALL, K. A., SALISBURY, G. W. & VANDEMARK, N. L. (1950.) **Sterility in the rabbit associated with soybean hay feeding.**—*J. Nutrit.* **42.** 487–500. [Authors' summary copied *verbatim.*] **1432**

Partial reproductive failure in the New Zealand white rabbit characterized possibly by a failure in implantation or early fetal death, decreased litter size, stillbirths, frequent vascular breakdown, particularly in the uterus, numerous partial fetal resorptions, and some partial paralysis of does has been observed as a consequence of soybean hay feeding. The data for does fed rations which contained roughages other than soybean hay included 34 mated females with 32 known pregnancies resulting and 32 litters born at the time of parturition, totaling 267 young, with an average litter size of 8·3 young per litter. Data from studies where soybean hay was fed included 71 mated females, 48 known pregnancies, 22 cases of vascular breakdown, and 39 litters born at the time of parturition, totalling 226 young, with an average litter size of 5·8 young per litter. In some cases females on the soybean hay diet refused to accept the male when the diet was fed prior to the date of mating; others lost their litters from failure to provide nests and to suckle the young satisfactorily; and still others died during gestation, following severe hemorrhage.

Research leading to identification of the specific factor or factors contributing to the impaired reproduction in the New Zealand white rabbit fed soybean hay is indicated.

BLAKEMORE, F. & VENN, J. A. J. (1950.) **Conditions associated with hypocupraemia of bovines in East Anglia.**—*Vet. Rec.* **62.** 756–760. **1433**

In two outbreaks of obscure disease in young cattle characterized by unthriftiness, the blood copper values were subnormal. There was no anaemia. Although no copper deficiency of the pasture could be demonstrated, the disease was cured by the administration of copper sulphate. The condition seems to be the result of interference in the utilization of absorbed copper.

—ROY MACK.

HUNDLEY, J. M. (1950.) **Achromotrichia due to copper deficiency.**—*Proc. Soc. exp. Biol., N.Y.* **74.** 531–536. [Author's conclusions copied *verbatim.*] **1434**

Black rats subsisting on a purified diet containing 14·6 μg of copper per g. grew well and maintained normal hemoglobin levels but developed marked achromotrichia. The achromotrichia could be cured by adding copper sulfate to the diet and could be prevented by diets containing approximately 20 μg of copper per g. The activity of liver, yeast and alfalfa in preventing and curing the achromotrichia was due to their copper content. Evidence sugesting that the basal purified diet used in these experiments may have been deficient in an unidentified growth factor has been discussed.

LIÉGEOIS, F. & DERIVAUX, J. (1949.) Sur quelques cas de tétanie commune ou spasmophilie. **[Tetany or spasmophilia in dogs.]**—*Ann. Méd. vét.* **93.** 201–209. **1435**

A brief discussion is given of the known functions of the balance of calcium, potassium, magnesium and sodium ions in the maintenance of normal muscle excitability.

Case histories are given of six dogs affected with spasmophilia, associated with a hypocalcaemia, which is suggested to have been due to parathyroid deficiency. All these cases responded to daily treatment with 5–10 drops dihydrotachysterol, an intermediate product in the irradiation of ergosterol. This substance has actions similar to the parathyroid hormone, but has the added advantages of being active *per os* and of producing a more prolonged effect. Because of its powerful mobilizing effect on bone calcium, it is contra-indicated in tetany accompanying osteofibrosis of renal origin. It is recommended that calcium should be administered simultaneously with the dihydrotachysterol in the treatment of tetany.

—T. W. F. PAY.

REINACH, N. & LOUW, J. G. (1950.) **The availability of the calcium and phosphorus in "electrofos" for bone formation. I. In the rat.**—*Onderstepoort J. vet. Sci.* **24.** 87–104. **1436**

Tabulated data were given of the biological availability for bone formation of two defluorinated rock phosphate products, used as phosphatic supplements (in comparison with dicalcium phosphate) when fed to albino-rats 4–5 weeks old, weighing approximately 60 g. To a basal diet containing 0·06% Ca, and 0·05% P, these supplements were added at two levels, 0·18% P and 0·36% P, the Ca : P ratio being maintained about 2 : 1. Bone ash, total Ca+P retention, and growth were used as criteria for evaluating the test materials. Statistical treatment of results revealed that when the two supplements were used (*a*) in equivalent amounts to dicalcium phosphate, the Ca+P was significantly less available for bone formation; (*b*) in double amounts, there was approximately equivalent bone formation.—D. MCALEESE.

DUCKWORTH, J. & ELLINGER, G. M. (1950.) **Ovarian hormones and calcium metabolism.**—*J. Endocrinol.* **7.** 7–11. [Authors' summary copied *verbatim.*] **1437**

In rats severely depleted by lactation on a Ca-deficient ration, body Ca was replenished at the same rate in normal and ovariectomized rats and in ovariectomized rats given oestrone and progesterone.

EWER, T. K. (1950.) **Rickets in sheep: field trials in East Anglia.**—*Vet. Rec.* **62.** 603–606. Discussion p. 606. **1438**

In three field trials, it was shown that, even on rich diets, ram lambs benefit from supplementary vitamin D. On poor quality diets, ewe and wether lambs developed clinical rickets, but two large doses of vitamin D administered in November and February were sufficient to prevent clinical rickets, although X-ray examination of the distal epiphyses revealed that even treated sheep developed mild rachitic lesions.

—G. B. S. HEATH.

GOODWIN, T. W. (1950.) **Carotenoids and reproduction.**—*Biol. Rev.* **25.** pp. 391–413. [Author's summary copied *verbatim.*] **1439**

After a brief discussion of the essential chemical properties of carotenoids, the identification, occurrence and distribution of the pigments in the gonads and related organs of plants and animals have been reviewed. The information available concerning the metabolism of carotenoids in reproductive tissues and their possible function in reproduction has also been reviewed systematically.

In the higher plants, as maturation proceeds the carotenoid content of the tissues decreases, owing probably to the redirection of carotenoid synthesis into the reproductive organs. Further, the synthetic mechanism itself must be altered in some way because new carotenoids, never encountered in leaves, are produced in the reproductive organs. There is no evidence that carotenoids are involved in fertilization. In fact, many pollens contain no carotenoids.

Differential distribution of carotenoids in male and female gametes is encountered in some species of both algae and fungi, but whereas nothing is known about carotenoid metabolism and function in relation to reproduction in fungi,

it is claimed that appropriate mixtures of stable and labile crocetin dimethyl esters stimulate both male and female gametogenesis in the alga *Chlamydomonas*.

In aquatic animals carotenoids are actively mobilized into the gonads during sexual reproductive activity, and in some cases are rendered water-soluble by attachment to proteins. Carotenoids do not appear to be necessary for normal embryonic development, but one report indicates their possible importance as fertilization hormones. Carotenoids may be present in the gonads to ensure that the larvae are adequately equipped for chromatophore responses. Change in general coloration associated with sexual activity are also often mediated through carotenoids; in the case of the fish *Cyclopterus lumpus*, for example, astaxanthin appears in the skin in large amounts during the summer spawning period. Similar changes can be observed in some insects, for instance, the bright yellow colour of sexually mature locusts is due to accumulation of β-carotene in the cuticle.

In mammals which store carotenoids, these pigments undergo metabolic changes associated with parturition, but as not all mammals store carotenoids, and since many similar changes occur with vitamin A, it is doubtful whether the carotenoids are of significance *per se*.

Although carotenoids appear to be unnecessary for the normal development of birds in both the pre- and post-embryonic stages, they are actively mobilized into birds' eggs. They may, however, be necessary for optimum conditions of fertilization by increasing the sperm competitive ability of cocks, i.e. when hens are inseminated with an equal mixture of spermatozoa from cocks on an adequate diet and those on a lutein-deficient diet, a larger proportion of offspring are produced from the normal group than from the lutein-deficient group.

ERB, R. E., SCOTT, G. W., Jr., NORTON, C. L. & MORROW, K. S. (1949.) **Observations on efficacy of vitamin supplements for new-born calves.**—*J. Anim. Sci.* **8.** 425–432. **1440**

Calves from 59 dairy herds (347 animals) were fed either 250,000 I.U. vitamin A, 50,000 I.U. vitamin D and 500 mg. niacin or a placebo on the day of birth. Incidence of scouring in supplemented group was 31·7% and in control group 32·3%. Incidence in particular herds varied between 7·4–72·2% and was related to general standards of management and feeding. —P. H. HERBERT.

BARNICOT, N. A. (1950.) **The local action of vitamin A on bone.**—*J. Anat.* **84.** 374–387. [Author's summary copied *verbatim*.] **1441**

Fragments of crystalline vitamin A acetate were attached to small pieces of parietal bone cut from 10-day-old mice, and the combination inserted into the cerebral hemisphere of littermates. The grafts were removed after 7 or 14 days and were examined either by supravital staining with neutral-red followed by maceration or as histological sections. Well-marked resorption, accompanied by numerous osteoclasts, and often leading to perforation of the bone was apparent after 14 days. The significance of the results is discussed in relation to existing knowledge of the skeletal effects of vitamin A deficiency and of overdosage with this vitamin.

JOHNSON, B. C., WIESE, A. C., MITCHELL, H. H. & NEVENS, W. B. (1947.) **The metabolism of nicotinic acid and its role in the nutrition of the calf.**—*J. biol. Chem.* **167.** 729–736. **1442**

In two new-born calves fed a nicotinic acid-free diet during 12 weeks there was a steady excretion of the vitamin and good weight gain; neither of these were affected by the addition of 1% sulphathalidine to the diet.—P. H. HERBERT.

GALGAN, M. W., BELL, J. M. & SPENCER, E. Y. (1950.) **Variations in vitamin content with method of cure and stage of growth of alfalfa and oats and their utilization as forages by lambs.**—*Sci. Agric.* **30.** 316–323. [Authors' summary copied *verbatim*.] **1443**

Two investigations of the effects of stage of maturity and method of curing of alfalfa and oat forage are discussed.

In the first, thiamine, riboflavin and carotene content of the cured forages were determined and it was found that oven-drying (62° C.) effected the greatest vitamin preservation and field-curing the least, with loft-curing being intermediate. Values obtained at six stages of maturity indicated consistent decreases in vitamin contents with the exception of thiamine in oats. Carotene was most readily affected by curing and stage of maturity.

In the second, the forages were similarly cured but represented early and late stages only. The feeds thus obtained were individually fed over a 70-day period to fattening lambs receiving a concentrate allowance in addition. The gains of the lambs fed artificially-dried forages were greater than those receiving sun or loft-cured products. Forage treatments did not influence carcass quality although, as with gains, alfalfa-fed lambs were superior. Plasma vitamin A values did not reflect forage treatments but there was a significant positive correlation between carotene intake and liver vitamin A at slaughter.

While it is true that no forage tested was subjected to excessive weathering during curing, it is significant that those samples higher in carotene produced better responses in the feeding trial and, of the vitamins studied, carotene was most readily destroyed by adverse treatment of the forage.

MILLIGAN, J. L., ANDERSON, J. O., COMBS, G. F. & Briggs, G. M. (1950.) **Dried penicillin mycelium as a riboflavin source in chick rations.**—*Poult. Sci.* **29.** 870–873. [Authors' summary copied *verbatim.*] **1444**

Dried penicillin mycelium, produced under commercial conditions, was found to serve satisfactorily as a riboflavin source for starting chicks fed a practical ration low in riboflavin.

During 9-week experimental periods, the growth response of chicks fed a ration containing dried brewers' yeast as the riboflavin supplement was consistently greater than that of chicks fed a similar ration containing an equivalent amount of riboflavin. This suggests that dried brewers' yeast, and perhaps other crude carriers of riboflavin, may supply important nutrients, other than riboflavin, which may be limiting factors in certain practical rations. The possibility that dried brewers' yeast supplied an unidentified chick growth factor is discussed.

HIBBS, J. W. (1949.) **Fundamentals of "metabolic disturbances" of dairy cattle.**—*Proc. 18th Ann. Conf. Veterinarians, Ohio.* pp. 34–38. **1445**

The purpose of this brief discussion of the present state of knowledge of the nature of acetonaemia, grass tetany, and milk fever is to stimulate constructive thinking, especially from the point of view of the "back to nature" approach.—E. COTCHIN.

ROBERTSON, A., THIN, C. & STIRLING, A. M. (1950.) **Isopropyl alcohol in cows suffering from acetonaemia.** [Correspondence.]—*Nature, Lond.* **166.** 954. **1446**

The finding of isopropyl alcohol in the blood, milk and rumen contents of cows with acetonaemia is recorded whereas none is present in normal animals. It is suggested that since by the ordinary analytical methods isopropyl alcohol would be estimated with the β-hydroxybutyric acid fraction and that isopropyl alcohol may be a precursor or metabolic product of acetone, a new approach to the problem of ketosis in cattle is required.—J. A. NICHOLSON.

VANDEPLASSCHE, M. (1949.) Het met *desoxycorticosterone* behandelen van ketonaemie bij Runderen. **[Desoxycorticosterone therapy in ketosis of cattle.]**—*Vlaam. Diergeneesk. Tijdschr.* **18.** 197–203. [English, French and German summaries, abst. from English summary.] **1447**

The author recommended two intravenous injections of 25 mg. desoxycorticosterone acetate at an interval of two days and the feeding of sugar at 4 lb. per day in concentrated solution for four days. To cows with constipation, sodium or magnesium sulphate was also given.

Out of 49 cows, kept in their sheds during treatment, 39 recovered in four or five days, and there was a rapid increase of milk-yield. There is, however, some danger of relapse when too much food is given as appetite increases, and cows with diarrhoea did not easily respond to treatment.

The author considered that desoxycorticosterone served a useful function in helping to restore disturbed metabolism, possibly in part by phosphorylation of vitamin B_1, the vitamin B_1 then taking part in carbohydrate metabolism and not being excreted in urine.

SIMONATTI, E. (1950.) Su alcune ipotesi etiologiche del collasso puerperale e relativa terapia parenterale. **[Causes and treatment of milk fever.]**—*Clin. vet., Milano.* **73.** 148–160. **1448**

S. discussed the theories advanced by others, namely hypovitaminosis C and D; hypocalcaemia with dysfunction of Ca and Mg metabolism; and the functions of the placenta and parathyroids. His own view, that puerperal collapse is due to insufficient medullary-adrenal and posterior-pituitary hormone is argued at length; and he appeals for experiments to be made on the effect of injecting these hormones. No actual observations of his own are given.

—R. MACGREGOR.

PLAAS. (1950.) Der Rübenblattdurchfall des Rindes. **[Diarrhoea in cattle caused by sugar beet leaves.]**—*Dtsch. tierärztl. Wschr.* **57.** 347–349. **1449**

P. discussed the problem of diarrhoea in cattle occurring regularly every season in German sugar-producing districts which is caused by a diet consisting almost entirely of sugar beet leaves and tops. The condition sets in 2–3 days after beet tops have been given for the first time. Rejecting theories attributing it to oxalic acid, high water content, dirt or a plant poison, he suggests that lactic acid-forming bacteria are present on beet leaves in larger numbers than on other plants and that favourable conditions such as acid reaction in the small intestine and excess of sugar promote rapid growth of *Bacterium lactis aerogenes* and *Streptococcus lactis*

at the expense of other organisms of the intestinal flora, so upsetting the balance of the digestive system. Lactic acid is produced in abnormally large quantities and causes irritation of the intestinal wall, increased peristalsis and secretion of digestive juices which leads ultimately to acute diarrhoea. Washed or silaged leaves are said to produce only a milder form of diarrhoea.

Further it is stated that such a one-sided diet affects mineral metabolism, leading to mineral depletion and finally to a serious calcium-phosphorus deficiency. Treatment of diarrhoea as such is therefore not enough and care should be taken to replenish the deficiencies incurred by this diet. P. recommends "betasal", a preparation containing calcium, phosphorus and silicic acid as a cure for beet leaf diarrhoea and consequently as a preventive measure against calcium-phosphorus deficiency.
—E. G.

FABRIANI, G., FRATONI, A. & SPADONI, M. A. (1948.) Azione biologica della tiamina nella modificazione in essa provocata da un fattore contenuto nelle foglie di felce di macchia (*Pteris aquilina*). **[Biological activity of vitamin B modified by the action of a substance from bracken leaves.]**—*Quad. Nutrizione.* **10.** 295–301. [Abst. from abst. in *Nutr. Abstr. Rev.* **19.** 68. (1949.)] **1450**

After the addition of a known amount of vitamin B_1 to an aqueous extract of the dried and powdered fronds of the bracken fern, no positive colorimetric test was obtained for vitamin B_1, although 98% of the added vitamin could be recovered.

Groups of rats on an adequate diet containing 200 or 300 μg. vitamin B_1 per 100 g. grew equally well whether bracken extract was included or not. When 40% dried bracken powder was included in the diet the rats declined and died.

Of three groups of pigeons on a diet of polished rice:—(*a*) control, (*b*) and (*c*) given 15μg. vitamin B_1 daily, with or without bracken extract, the controls died and the others survived in good condition.

THOMAS, B. & WALKER, H. F. (1949.) **The inactivation of thiamin by bracken** (*Pteris aquilina*).—*J. Soc. chem. Ind., Lond.* **68.** 6–9. [Abst. from abst. in *Nutr. Abstr. Rev.* **19.** 68. (1949.)] **1451**

Rats fed a diet containing 40% dried bracken and 30μg. vitamin B_1 daily, lost weight and died within 30 days; the heart and liver of these animals had a very low vitamin B_1 content. Other rats fed the same diet with large supplements of vitamin B_1 grew normally. These results confirmed the antagonistic effect of bracken fern on vitamin B_1 reported by Weswig *et al.* [*V.B.* **18.** 310]. Incubation of 1 g. of bracken with amounts of vitamin B_1 ranging 5–520 μg. inactivated 98% of the vitamin B_1. The inactivity substance was destroyed by hydrolysis with dilute hydrochloric acid and by autoclaving.

PERKINS, L. E. (1950.) **Experiments on bracken poisoning.**—*Brit. vet. J.* **106.** 377–385. **1452**

P. discussed previous findings by other workers and described a comprehensive series of feeding experiments, carried out in 1928 but not hitherto published, which included a study of the effects not only on cattle, but also on sheep, goats, g. pigs and rabbits. Results appeared to indicate:—that bracken eaten in the natural state in large quantities by cattle may produce fatal results; sheep were not so susceptible; goats disliked eating it; g. pigs and rabbits ate it with impunity; that it was poisonous during all the growing period and even bracken hay may be injurious.

No conclusions were drawn on the amount of bracken necessary to cause death or on the time factor between commencement of eating the plant and appearance of symptoms. One steer consumed 3,278 lb. of autoclaved bracken and remained in perfect health. It appears that the toxic factor in bracken which causes death in cattle is destroyed by heat; and that it is a thermolabile toxin with or without secondary bacterial infection. The lesions examined P.M. were fairly constant and were described in detail.

There is some mistake in the arrangements of the summarized results in table I as they do not correspond with the text of the article.

[For anti-thiamine activity of plant materials see Weswig *et al. V.B.* **18.** 310.]—E. M. J.

EVANS, W. C., JONES, N. R. & EVANS, R. A. (1950.) **The mechanism of the anti-aneurin activity of Bracken** (*Pteris aquilina*).—*Biochem. J.* **46.** pp. xxxviii-xxxix of Proceedings. **1453**

The authors discussed the properties of the inhibiting factor, derived from bracken, of vitamin B_1. It is a stable substance when air dried in the intact leaf, but is inactivated by steaming or autoclaving. When the factor is extracted with chloroform and water, it is thermolabile, behaves like an enzyme, but can be freeze dried without loss of activity. The authors consider that the bracken enzyme causes a cleavage of the vitamin molecule at the CH_2 linkage, this hypothesis being supported by chromatographic evidence of the presence of the thiazole component as one of the products of

reaction. A low temperature concentrate of the enzyme (activity 100 μg. B_1 per ml.) when added to an adequate basal diet for the growth of rats has the same effect as the addition of bracken leaf powder, causing vitamin B_1 deficiency, whilst a parallel experiment with a boiled concentrate added to the diet allowed normal growth. The authors claim to have found a plant thiaminase in bracken and indicate that it is also present in *Equisetum arvense*, (horse tail).

—E. M. J.

See also absts. 1503 (temperature and metabolism in fowls); 1529 (soil minerals and nutrition of cattle); 1555 (vitamin A, carotene); 1557 (diet for horses).

DISEASES, GENERAL

ANON. (1948.) De Betekenis van de Dierziekten voor de Volksgezondheid. [**The importance of animal diseases to the health of man.**] (Proceedings of the Institute for Preventive Medicine No. XII.)—pp. 91. Leiden: Stenfert Kroese. **1454**

This is the report of the proceedings of a meeting of Dutch medical and veterinary scientists. The need for closer contact between medical and veterinary sciences was emphasized. Effective control of certain human diseases cannot be achieved without effective control in domesticated and wild animals. The control of diseases of livestock has not hitherto been viewed in Holland as an essential for the promotion of public health.

van der Hoeden, J., gave a paper on communicable diseases caused by bacteria and fungi, the incidence, importance and epidemiology of those known to be endemic in various districts and warned against certain diseases which might be introduced.

Verlinde, J. D., dealt with the virus diseases of animals transmissible to man.

van Thiel, P. H., dealt with parasitic infestations of animals which may affect man especially in Holland and listed the species of *Leptospira*, protozoa, trematodes, cestodes, nematodes and arthropods which normally infest animals or may utilize them as hosts in their larval stages. The prevalence and epidemiology of these parasitic diseases were discussed.

Beijers, J. A., discussed the control of certain infectious diseases of animals which are of great importance in human medicine. He dealt in detail with the history of control of TB. in cattle. He expressed surprise that sarcoptic mange of cattle had not yet been included in the list of scheduled diseases. He suggested that the Universities should attach more importance to the communicable diseases and institute a course in comparative medicine, which would result in closer co-operation between medical men and veterinarians in rural areas. He advocated the institution of regular joint meetings and review evenings in rural districts.

Julius, H. W., discussed the importance of diseases common to animals and man and by means of excellent diagrams and tabulations demonstrated how various groups of the population become infected with certain diseases of various animal species by direct contact with living animals, by the ingestion of or contact with certain animal products, by contact with others or with animal excreta, and by the use of live vaccines in the control of animal diseases. [In one of the tables glanders is unfortunately listed as a disease of cattle and omitted from the list of diseases which may be disseminated by the horse. There are a few omissions also in other lists.] J. advocated the institution of post-graduate courses and health education of the public.—P. L. LE ROUX.

HIPÓLITO, O. (1948.) Doenças dos animais transmissíveis ao homem. [**Diseases of animals transmissible to man.**]—*Min. Agric. Serv. Inform. Agric., Rio de J.* pp. 89. **1455**

A brief, popular account of some diseases common to man and animals. Brucellosis is given first place, followed by TB., anthrax and rabies. F. & M. disease and ornithosis (psittacosis), although comparatively rare in man, are considered of more importance than glanders. Actinomycosis and tetanus are mentioned. Only three worms, echinococcus, cysticercus, and trichinella are described, and no mangé parasites or other arthropods. There is a summary dealing with control and giving conventional rules.

—R. MACGREGOR.

PAUL, J. R. (1950.) **Social and geographical pathology.**—*Yale J. Biol. Med.* **22.** 709–713. **1456**

Social pathology is concerned with communities, geographical pathology with larger populations and geographical areas; both are concerned with the detection of diseases, the measurement of their incidence and trend, and the attempted analysis of the circumstances, such as season, climate, race, environment and occupation, affecting their incidence.

Although the idea of geographical pathology is not a new one, and the International Society of Geographical Pathology was founded in 1929, the approach and onset of the second world war stimulated interest in the subject. A World

Atlas of Epidemiology ("Seuchen Atlas") appeared in Germany in 1942–43, and the first volume of Global Epidemiology: A geography of disease and sanitation (Simmons, J. S. *et al.*), dealing with India and the Far East, appeared in 1944, Recently, the suggestion has been made that an Institute of Geomedicine should be established under the auspices of UNESCO and the World Health Organization.—E. COTCHIN.

RODRIGUEZ, I. G. (1949.) Diagnostico diferencial en los equidos, del botulismo, encefalomielitis infecciosa y paraplejia enzootica. **[Differential diagnosis of botulism, infectious encephalomyelitis and enzootic paraplegia in horses.]**—*Bol. Inf. Col. Vet. Esp., Supl. cient.* **3.** 471–478. **1457**

A short résumé of the clinical features, epidemiology and laboratory diagnosis of the above three diseases. No new knowledge.
—I. W. JENNINGS.

NEUMANN-KLEINPAUL, K. (1950.) Lymphatische Leukose beim Pferde. **[Lymphatic leucosis in the horse.]**—*Mh. Vet.-med.* **5.** 129–131. **1458**

A case of lymphatic leucosis in a 9-year-old mare is recorded. There was a marked increase in lymphocytes owing to their formation being much more rapid than their destruction, 66,000 per c.mm. being present in the blood. All the lymphatic tissue appeared to be affected and there was anaemia, hydraemia with marked oedema and hypertrophy of the left heart. Transmission experiments were unsuccessful so that it remained an open question as to whether the condition was or was not due to some infection.—J. A. NICHOLSON.

QUINLAN, J., VAN RENSBURG, S. W. J. & STARKE, N. C. (1949.) **The soft palate (Palatinum molle) as a cause of dyspnoea in two racehorses.** —*J. S. Afr. vet. med. Ass.* **20.** 125–127. **1459**

In both cases expiratory noises, heard only during exertion, were first noticed at the age of five years. After negative rhino-laryngoscopic examination, exploratory laryngotomy was performed. No abnormalities were found, but since it was thought that the soft palate alone must be responsible, a portion of the free border of this organ was removed from each horse. After convalescence both horses proved sound. The authors suggest that degeneration of the pharyngeal branch of the vagus nerve in these two unusual cases was the probable cause of the trouble.—ROY MACK.

KOREN, J. & TURNER, V. (1949.) Prikaz nekoliko slučajeva oboljenja konja pod znacima "Mraclinske bolesti" u okolici Ljubljane. **["Mraclin" disease in Yugoslavia.]**—*Vet. Arhiv.* **19.** 122–133. [English & French summaries.] **1460**

A brain-liver affection in horses in Yugoslavia is described. The condition is believed to be either a plant poisoning or a *Leptospira* infection. Symptoms are similar to those of Žd'ár disease in Czechoslovakia [*V.B.* **20.** 464–465].
—E. G.

HONEKER. (1950.) Über Ziegenzucht und Ziegenkrankheiten. **[Diseases of goats.]**—*Dtsch. tierärztl. Wschr.* **57.** 174–176 **1461**

A general discussion of the development of goat breeding in Germany and of the present position of research into goat diseases.
—ROY MACK.

SCHULZE, W. & STUBENRAUCH, M. E. (1950.) Klinische Beobachtungen bei inneren Erkrankungen der Ziegen. **[Clinical aspects of goat diseases.]**—*Mh. Vet.-med.* **5.** 283–285. **1462**

The authors dealt with the contagious diseases, arthropod and helminth parasites, disease of the alimentary tract, mastitis and disorders of mineral metabolism. They described a technique of rumenotomy.—ROY MACK.

TIMONEY, J. F. (1950.) **Oedema disease of swine.**—*Vet. Rec.* **62.** 748–756. **1463**

This disease, first recognized in Northern Ireland in 1938, has in recent years become of considerable economic importance in Ireland both north and south. T. gave an account of his extensive study of the epidemiology, symptoms, pathology and aetiology. The incidence is highest in pigs at the weaning age but no correlation was established with management at the time of weaning nor with any particular foodstuff used at that time. The syndrome comprises a staggering gait, paralysis particularly of the hind limbs and oedema of the eyelids or ears or both. The temperature is usually normal. Death usually occurs within 24 hours of the onset of symptoms. In most outbreaks the onset is sudden, the duration short and the termination abrupt, the mortality being generally over within four to five days of the occurrence of the first case. On P.M. examination the carcass is usually in very good condition; the subcutaneous tissues of the throat, abdomen, face and ears may be oedematous. There is generally an excess of fluid in the peritoneal cavity. There is a varying degree of oedema of any of the following organs:—mesentery, mesenteric lymph nodes, the wall of the stomach, the wall of the intestine, and the lungs.

In attempts to determine the aetiology dietetic causes were studied, but neither chemical

analysis nor feeding experiments with suspected foodstuffs gave any conclusive results. Attempts to demonstrate an infective agent either bacterial, viral or rickettsial in nature, by contact, feeding and inoculation experiments all gave negative results. A possible relationship with Teschen disease was particularly studied but neither histological examination of brain and spinal cord nor transmission experiments supported this view. A theory that the disease is toxaemic in nature was extensively studied. Intestinal contents of pigs that had recently died of the disease were centrifuged for one hour at 2,800 r.p.m. and the supernatent fluid was injected intravenously in 10 ml. doses into two pigs. One of these died 22 hours later after having symptoms similar to those of the naturally occurring disease and on P.M. examination excess of peritoneal fluid and oedema of the wall of the stomach, and of the colonic mesentery were present. Similar experiments were carried out on a total of 111 pigs varying in weight from 20–60 lb. Of these 10 died at intervals of 12–22 hours after injection without having developed any symptoms of the disease, but all 10 had characteristic lesions P.M.; of 34 others which developed characteristic symptoms 25 died, 6 were killed *in extremis*, 2 were killed while sick but not *in extremis* and one recovered. Twenty-five developed toxic symptoms within 5 min. of injection and died in from 20 min.–2 hours. None of these had the characteristic lesions on P.M. examination. T. considers that the disease is caused by a toxin either preformed in the food or developed in the bowel.—Roy Mack.

Lamont, H. G., Luke, D. & Gordon, W. A. M. (1950.) **Some pig diseases.**—*Vet. Rec.* **62.** 737–743. Discussion: pp. 743–747. **1464**

Oedema disease as seen in Northern Ireland is described, the features being very similar to those described by Timoney (see preceding abst.). The skeletal musculature was usually very pale and had the appearance of a partially bled carcass. Nine pigs were used in attempts to infect them by intravenous injection of supernatent fluid from centrifuged bowel contents as described by Timoney; only one of these developed the disease. Some pigs died apparently of shock within 15 min. of injection. Serum protein estimations had been made on a series of affected and in-contact pigs and indicated a drop in serum protein as compared with normal healthy pigs. No cases of this disease have occurred in the largest pig farm in N. Ireland which differs from most others in the attention paid to housing the pigs in warm and dry sties. The special methods of housing on this farm are described. As originally erected in 1925 the houses were simply large concrete shells with concrete floors divided into pens. Losses from anaemia, influenza, pneumonia and paratyphoid were very heavy in spite of excellent hygiene and feeding. Alterations designed to conserve heat have since been made and each pen is now provided with a wooden " sleeping creep " within which a temperature of between 75°–80° F. could be maintained. These arrangements gave rise to misgivings concerning the adequacy of ventilation; however these fears proved to be groundless and losses have been reduced to a very low level. This experience emphasizes the dangers associated with " chilling " in pigs.

A condition which the authors designate " mulberry heart " is described. The myocardium of the right ventricle is haemorrhagic and deep purple in colour; it is thought that this condition may be related to oedema disease of pigs. [See preceding abst.]

Two forms of diarrhoea of unknown causation but thought to be of a dietetic nature are described. One form responds well to treatment with sulphamethazine and the other to the addition of some form of animal protein to the diet.

Cases of rickets have been encountered in sucking pigs aged 14 days.

Trembling in young pigs was seen in several litters of Wessex Saddleback pigs both pure and cross-bred. The condition clears up spontaneously as the young pigs grow older; the cause is unknown.—Roy Mack.

Zettler. (1950.) Gedanken zur Bekämpfung der Schnüffelkrankheit der Schweine. **[Control of " snuffles " in pigs.]**—*Tierärztl. Umsch.* **5.** 217–218. **1465**

Z. states that the condition of " snuffles " dealt with is related to hereditary factors affecting facial conformation.—Roy Mack.

Weis, J. (1948.) Rozprava o žaludku psa. (Část II.). **[Stomach surgery in the dog (II).]** —*Čas. československ. Vet.* **3.** 436–442. **1466**

Surgical technique in gastric tympanites, perforation, ulcers, foreign bodies and similar stomach diseases in dogs is discussed.—E. G.

Taylor, C. B., Baldwin, D. & Hass, G. M. (1950.) **Localized arteriosclerotic lesions induced in the aorta of the juvenile rabbit by freezing.**—*Arch. Path.* **49.** 623–640. [Authors' summary copied *verbatim.*] **1467**

Local segments of the abdominal aorta of the young rabbit were frozen by contact with a cold needle. A microscopic study of the sequence of structural changes occurring in the frozen segments over a period of twenty-four weeks

was made. Continuity of fibrous and elastic structure of the aortic wall was maintained. Inflammation was mild or negligible, and inflammatory cells were restricted to the adventitia. Smooth muscle cells of the media disintegrated, and deposits of calcium appeared in regions occupied by degenerating remnants of these cells. Proliferation of new cells, except for inconstant replacement of smooth muscle in the media, and deposition of new intercellular structure, occurred to a significant degree only in the intima, internal to the old internal elastic membrane. As time passed, a new aortic wall, almost indistinguishable in structural content and thickness from that of the original or undamaged vessel, was regenerated in the framework of the proliferating intima. This appeared to offer almost a perfect functional substitute for the adjacent semirigid, partly calcified degenerate segment of aortic wall.

LEIF, W, R. & KRUEGER, A. P. (1950.) **Studies on the experimental epidemiology of respiratory infections. 1. An apparatus for the quantitative study of air-borne respiratory pathogens.** —*J. infect. Dis.* **87.** 103–116. [Authors' summary copied *verbatim.*] **1468**

An apparatus is described in which experimental air-borne infections may be quantitatively produced and studied. It consists of a series of interconnecting steel chambers containing an atomizer, exposure system, air sampling devices and auxiliary instruments and safety equipment. A typical experimental operation is described. The various experimental studies to which the apparatus has been adapted, briefly mentioned here, will be presented in papers to follow.

HAYNAL, E. & GRÁF, F. (1950.) **The role of the hypophyseal-hypothalamic system in the pathogenesis of erythraemia and symptomatic polycythaemias.**—*Acta. med. scand.* **139.** 61–77. [Authors' summary copied *verbatim.*] **1469**

Experimental data and clinical observations suggest some relationship between the hypophyseal-hypothalamic system and haematopoiesis.

Functional tests performed on 10 patients suffering from polycythaemia vera demonstrated hyperfunction of the hypophyseal-hypothalmic system.

In cases of symptomatic polycythaemia (congenital heart disease, congestive cardiac failure) the hyperfunction of the hypophyseal-hypothalamic system could also be established.

Procedures capable of reducing the hypophyseal function (administration of sex hormones, of thiamine, X-ray irradiation) failed to influence the polycythaemia although the functional tests showed a decrease of the pituitary activity.

These observations suggest that an increased activity of erythropoiesis seems to be connected with or brought about through the agency (increased activity) of the hypophyseal-hypothalamic system.

See also absts. **1433** (conditions in cattle associated with hypocupraemia); **1449** (sugar beet leaf diarrhoea in cattle); **1495** (virus diseases); **1507** (blood diseases); **1543–1544** (hereditary diseases); **1545** (genital abnormalities in sows); **1571** (book, piglet mortality).

POISONS AND POISONING

DELANOË, E. (1948.) A propos des fluoroses expérimentales et naturelles. [**Experimental and natural fluorine poisoning.**]—*Bull. Soc. Path. exot.* **41.** 238–241. **1470**

Fluorine is fatal in doses of over 68 mg. per kg. body weight experimentally but in districts where natural phosphates containing fluorine occur, animals and human beings develop resistance to the inhaled fluorine. Effects on temporary and permanent teeth are discussed.

—MALCOLM WOODBINE.

LINDNER, A. F., BRIESKORN, C. H. & FRANKE, H. (1948.) **Nitrate poisoning in cattle.**—*Z. Lebensmitt Untersuch. Forsch.* **88.** 400–404. [Abst. from abst. in *Brit. Abstr.* BIII. August. p. 344 of absts. (1949).] **1471**

Cases of poisoning are recorded in cattle having access to pools the water of which contained nitrate 17–65 and nitrite 0·3–0·5 g. per l. and fed wilted sugar-beeet tops, containing 0·2-0·8% (wet weight) nitrate and traces of nitrite. Clinical signs and P.M. findings were typical of nitrite poisoning, toxic amounts having probably been formed by microbiological reduction of the nitrate in the rumen.

STAHLER, L. M. & WHITEHEAD, E. I. (1950.) **The effect of 2, 4-D on potassium nitrate levels in leaves of sugar beets.**—*Science.* **112.** 749–751. **1472**

Sublethal dosages of 2, 4-D (2, 4-dichlorophenoxyacetic acid) may markedly affect the metabolism of treated plants and this may result in the accumulation of toxic quantities of nitrates similar to those found in conditions of drought. Sugar beet plants are very sensitive to 2, 4-D and concentrations of 100 p.p.m. kill seedlings, older plants being more resistant. A study of the nitrate content of air-dried untreated and treated

sugar beet leaves revealed an average of 0·22% and 4·5% respectively, the latter being well above that considered to be the minimum lethal concentration in animal fodder.

The authors emphasize the need of caution in grazing or feeding sugar beet tops or certain other plants which have been accidentally or intentionally sprayed with 2, 4-D until its role in the accumulation of toxic quantities of nitrates in these species has been more fully determined.
—E. M. J.

CONLEY, B. E. (1949.) **Why the American Medical Association is interested in the pesticide problem.**—*Pests.* **17.** No. 4. pp. 18–22. [Abst. from abst. in *Bull. Hyg., Lond:* **25.** 156. (1950). Signed: CHARLES WILCOCKS.] **1473**

A note on occupational hazards in relation to organic phosphate compounds which carry severe risks, methyl bromide, ethylene chlorohydrin, sodium fluoroacetate, benzene hexachloride and xanthone.

VIRGILI, R. & MARCHIAFAVA, G. (1949.) Quadri anatomo-patologici nell'intossicazione acuta sperimentale da DDT con particolare riferimento al sistema nervoso. [**Anatomo-pathological findings in acute experimental DDT poisoning with special reference to the nervous system.**]—*Riv. Malariol.* **28.** 107–124. [English Summary.] [Abst. in *Bull. Hyg., Lond.* **25.** 293. (1950), copied *verbatim.* Signed: NORMAN WHITE.] **1474**

This work on the toxicology of DDT was prompted by the cases of DDT poisoning that have been published, and to which references are made in the introduction to the report. A fatal dose of DDT dissolved in olive oil was given by stomach tube to each of three guineapigs and four rabbits. Two cats accidently poisoned with DDT were also examined. The symptoms displayed and the post-mortem findings are recorded and illustrated. Hyperaemia and cloudy-fatty degeneration of heart, liver and kidneys were constant. The lungs were hyperaemic and there was a serous or blood-stained pleural effusion. Marked alterations were found in the brain, notably to the ponto-bulbar nuclei. These changes account for the respiratory paralysis which is the usual cause of death in DDT poisoning.

VASHKOV, V. I. (1947.) [**Tests of toxicity of D.D.T. when applied to the skin.**]—*Med. Parasitol., Moscow.* **16.** 38–40. **1475**

The toxic effect of D.D.T. when in contact with the shaven skin of a rabbit was studied. No new material was recorded.—J. JONAS.

MOORE, A. M. & ROCKMAN, J. B. (1950.) **A study of human hypersensitivity to compounds of the mustard gas type.**—*Canad. J. Res.* Sect. E. **28.** 169–176. [Authors' abst. copied *verbatim.*] **1476**

A method has been developed for expressing quantitatively the results of measurements of human skin sensitivity to compounds of the mustard gas type. Using this method a study has been made of induced hypersensitivity to *bis*(β-chloroethyl)sulphide, and to ethyl *bis*(β-chloroethyl)amine, and of cross reactions involving these two compounds. The relationship between hypersensitivity and the "flare reaction" has been investigated, and a simple method of inducing the latter is reported. A possible significance of these findings in connection with the healing of mustard gas burns is suggested.

DHERS, V., ROCHE, L. & TOLOT, F. (1949.) Accidents allergiques dus au ricin dans l'industrie. [**Allergic conditions due to castor oil in industry.**]—*Arch. Malad. Prof.* **10.** 26–32. [Abst. from abst. in *Bull. Hyg., Lond.* **24.** 665–666. (1949).] **1477**

Four cases were observed of sensitization in persons engaged in grinding castor-oil cake. The symptoms which develop 6–8 hours after exposure were described and the illness lasted 1–4 days. "Ricinallergen" which is considered to be set free when castor-oil cake is crushed, attacks some persons more than others, especially those in poor health. Good ventilation is recommended when this work is being done.

GEARY, T. (1950.) **Castor bean poisoning.**—*Vet. Rec.* **62.** 472–473. **1478**

G. recorded poisoning of a young bull, a heifer, a sow and its litter, 50 growing chickens and laying hens, all having had one feed of a mash containing castor bean husk (1·2 per 100 g. meal), and resulting in the death of the bull, the heifer, one weaned and two unweaned pigs. Analysis revealed castor bean husks in the meal and ingesta. The results of P.M. examination of the carcasses are summarized.—D. MCALEESE.

STEWART, A. G., BARNUM, D.A. & HENDERSON, J. A. (1950.) **Algal poisoning in Ontario.**—*Canad. J. comp. Med.* **14.** 197–202. **1479**

The poisoning of animals, especially of cattle, by fresh water containing heavy growths of blue-green algae was discussed, the history, toxicity, symptoms and pathology, types of algae and chemistry of the water being included in the discussion. Poisonings at Sturgeon Lake appeared to be caused by a species of *Mycrocystis*

occurring under certain incompletely defined growth conditions such as a period of continuous hot weather, a gentle south wind and a high organic content of the water as a result of sewage pollution.

Of three samples of water containing this algal growth collected on 15th July, 25th July and 19th September respectively, the first was found to be much more toxic than the second and the third was non-toxic. Six gal. of the first sample given *per os* killed a 1,100 lb. cow in 25 min., observations of symptoms and P.M. findings being recorded.

Even in an interval of ten days the algal flora may change so much that unless samples can be obtained at the time of poisoning there may be difficulty in tracing the causal organism.

—R. GWATKIN.

SAPIRO, M. L. (1950.) **Studies on the photosensitisation of animals in South Africa. XII. An attempt to identify the icterogenic factor in geeldikkop; the reaction of nitrous acid on chlorophyll.**—*Onderstepoort J. vet. Sci.* **24.** 105–118. [Author's summary copied *verbatim.*] **1480**

The reaction of nitrous acid on chlorophyll yielded four compounds, denoted for convenience as A, B, C and D. The compounds are all distinctive in appearance, are highly coloured and three of them have sharp melting points. A convenient process of separation of the compounds and easy methods for the purification of A, B and C have been found. A, B, and C all appear to be tetra-substituted pyrrole derivatives. A and B each exhibit tautomerism, probably of the nitroso-isonitroso type, whereas C appears to have only one form. A and B form monoacetyl derivatives, but C yields no derivatives of this type. Formulae have been tentatively proposed as follows:—

A (Molecular formula): $C_{14}H_{13}N_3O_3$.
B (Molecular formula): $C_{14}H_{16}N_2O$.
C (Empirical formula): $C_{13}H_{10}NO$ or $C_{13}H_{11}NO$.

None of the compounds exhibited icterogenic or photosensitising properties when administered to sheep, either by subcutaneous injection or by oral administration.

See also absts. **1449** (sugar beet leaf diarrhoea in cattle); **1450–1453** (bracken); **1460** (" Mraclin " disease) ; **1568** (report, U.S.A.).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

DALE, H. (1950.) **The pharmacology of histamine: with a brief survey of evidence for its occurrence, liberation, and participation in natural reactions.** —*Ann. N.Y. Acad. Sci.* **50.** 1017–1028. **1481**

D. discussed the development of interest in the study of histamine from 1907, including its action as a stimulant of plain muscle, its relaxing effect on capillary walls, its vasodilator reactions, the stimulation of gastric secretion, the production of severe headache and a rapid fall of body temperature.

Evidence presented by Anrep *et al.* (1935) & (1939) for the liberation of histamine by normal cellular activity in a manner adequate to account for functional vasodilatation is discussed; also whether it acts by itself or by a synergism with CO_2.

In the use of antihistaminic remedies to give relief from symptoms caused by pathologically liberated histamine, D. emphasizes that these substances should not entail the harmful suppression of a part played by histamine in a normal and essentially physiological adjustment. In the absence of compelling evidence it cannot be assumed that the occurrence of histamine in the active cells of so many organs and tissues has none but a potentially injurious significance.

—E. M. J.

ROCHA E SILVA, M. (1950.) **The role played by leucocytes and platelets in anaphylactic and peptone shock.**—*Ann. N.Y. Acad. Sci.* **50.** 1045–1067. **1482**

The author discussed the mechanism of anaphylaxis particularly in regard to the haematological conception of the phenomenon. In rabbits there was a correlation between disintegration of platelets and leucocytes and liberation of histamine. The author attempted to correlate the mechanism of liberation of histamine and other metabolites with activation of enzymes of the proteolytic type. When rabbits were injected intravenously with glycogen from dog's liver there was a fall in leucocytes and platelets and the blood elements became more sticky and agglutinated. The author considers that (1) the release of histamine is connected with a breakdown of the white blood elements; (2) the clumping of the white blood elements is a constant event during anaphylactic and peptone shock; (3) histamine might constitute a localizing factor for the capture of leucocytes and platelets which have begun to clump in the peripheral circulating blood; (4) the obstruction of the small vessels and capillaries might depend upon two factors, (*a*) histamine and (*b*) the agglutination of the white blood elements.

Anaphylaxis in dogs is discussed in detail, the conditions being different from those in rabbits; the histamine which appears in circulating blood during shock comes mainly from the liver.

The activation of proteolytic enzymes during anaphylactic and peptone shock is discussed and also the probable chain of results leading to histamine release. There was a discussion on the paper which is briefly recorded.
—E. M. J.

Feinberg, S. M. (1950.) **Antihistamine therapy. Experimental and clinical correlation.**—*Ann. N.Y. Acad. Sci.* **50.** 1186–1201. **1483**

F. discussed the evaluation of an antihistaminic drug by a consideration of (1) the manifestations which are helped and to what extent, (2) undesirable actions of the drug and (3) methods of testing prior to clinical experience. The general characteristics of ten drugs are given which F. had tested up to 1947. He considered that they are useful adjuncts in the treatment of allergic manifestations, but they cannot replace more basic immunological therapy of elimination and desensitization. They all have undesirable side actions the most consistent being sedation; also the possible remote toxic effects of many are still unknown.

Because of the differences in individual clinical and toxic response a choice of a certain number of drugs is helpful; the antihistaminic drug which is sufficiently potent and entirely non-toxic has yet to be synthesized. The clinical evaluation presents a difficult problem and F. considered that in methods of assay, the antiwhealing effect on the human skin revealed the greatest correlation with clinical effectiveness.

The study of these drugs is linked with that of histamine function and the mechanism of the allergic reaction.—E. M. J.

Parfentjev, I. A. (1950.) **The effect of antihistaminics on mice hypersensitive to H. pertussis vaccine.**—*Yale J. Biol. Med.* **23.** 28–31. [Author's summary copied *verbatim.*] **1484**

In experiments with Thephorin [2-methyl-9-phenyl-2, 3, 4, 9-tetrahydro-1-pyridindene] it was possible to demonstrate the inhibiting effect of this drug on both histamine shock and anaphylaxis in mice hypersensitive to H. pertussis vaccine.

Kendrick, J. W. (1950.) **Some aspects of large animal fracture therapy.**—*Thesis. Cornell.* pp. 38. **1485**

A report on investigations to determine the practicability of treatment of fractures of the long bones in the horse and cow. Twenty-six cases are reported. K. concentrated on two types of treatment: external fixation supplemented by plaster of Paris, and the plaster of Paris cast. Two cases of intramedullary pinning, and two of unsupported external fixation are described.

K. concluded that fractures of the tibia and radius can be treated successfully with external fixation supported by plaster of Paris. Pins of $\frac{1}{4}$ inch in diameter are satisfactory when supported by plaster of Paris. Larger pins ($\frac{3}{8}$ inch) are necessary if not supported. Infection was not a problem.

Fractures below the knee and hock were treated with a simple plaster of Paris cast. Technique of application determines the strength. Proper temperature and soaking time, avoidance of movement after the critical point, and laying the bandage so that the cast is form-fitting are important when applying a cast.—H. L. Gilman.

Creskoff, A. K. (1950.) **Colloidal iron: A well tolerated, effective oral hematinic.**—*Amer. J. med. Sci.* **220.** 553–556. [Abst. from author's summary.] **1486**

A clinical evaluation of a colloidal iron compound on human beings was performed.

This compound has proved to be a satisfactory source of iron for hemoglobin regeneration in iron deficiency anemia.

Huddleson, I. F., Sanders, E. & Mattano, L. A. (1950.) **The binding of blood serum *gamma* globulin by sulfadiazine.**—*Amer. J. Vet. Res.* **11.** 366–370. [Authors' summary copied *verbatim.*] **1487**

It has been shown that the addition of phosphoric acid (H_3PO_4) to a mixture of sodium sulfadiazine and bovine serum produces a precipitate which consists of serum protein and sulfadiazine. The physical character of the protein removed by the drug was determined by electrophoretic analysis. Most of the protein removed has the characteristics of μ globulin.

The protein fraction separated from Brucella antiserum by means of sulfadiazine precipitation has been shown to have antibody properties of a high order. The antibody in the presence of serum complement will inhibit the growth of Brucella organisms. These two agents in the presence of a low concentration of sodium sulfadiazine form a bactericidal complex.

Mujić, N., Tomašić, P. & Fleš, D. (1949.) **[The antibacterial action of some pyrrole derivatives.]** —*Acta med. Jugoslavica.* **3.** 228–242. [Croatian Summary.] [Abst. from abst., in *Bull. Hyg., Lond.* **25.** 303. (1950). Signed: Mary Barber.] **1488**

Since the prosthetic group of many enzymes important for the metabolism of microorganisms (*e.g.*, catalase) is protoferrihaeme (a ferric salt of 1, 3, 5, 8-tetra-methyl-2, 4-divinyl-porphine-6, 7-dipropionic acid) the authors decided to test the action of pyrrole derivatives on bacterial growth. The organisms tested were *Staphylococcus aureus*, *Bact. coli*, *Salm. typhi*, *Salm. paratyphy B*, *Shigella shigae*, *Shigella flexneri*. The last four were all recently isolated strains. Seventeen derivatives of pyrrolecarboxylic acid were tested and 6 showed antibacterial activity in a concentration of less than 4 per thousand.

In further tests two of these compounds, 2, 4 - dimethyl - 3 - carbethoxypyrrole and 2, 4 - dimethyl-5-oxymethyl-3-carbethoxypyrrole were found to be the most active.

COLGLAZIER, M. C. (1950.) **Comparison of the in vitro activity of nisulfazole with that of other sulfonamides.**—*J. Lab. clin. Med.* **35.** 875–884. [Abst. from author's summary.] **1489**

Nisulfazole [2-(*p*-nitrobenzene sulphonamide)-thiazole] might be more effective than the other sulfonamides tested in the treatment of certain intestinal infections, including certain salmonella associated with food poisoning.

Its antibacterial action is not entirely dependent upon its reduction product, sulfathiazole, but is due to the combined action of sulfathiazole with the nitro compound itself, or with some intermediate reduction product.

RAISTRICK, H. (1949.) **Chloromycetin: its structure and synthesis.**—*Nature, Lond.* **163.** 553–654. **1490**

Chloromycetin, also known as chloramphenicol, is an antibiotic derived from *Streptomyces venezuelae*. It was highly active in tests on chick embryos and mice experimentally infected with a number of rickettsiae and viruses including rickettsial pox and viruses of psittacosis and lymphogranuloma venereum.

In treatment of human beings with chloromycetin 25 cases of scrub typhus in Malaya responded favourably, there being no deaths and no complications; in 22 cases of louse-borne typhus in Bolivia favourable effects appeared rapidly after treatment and all patients made a rapid recovery.

The chemical structure of the drug is described as (l)-ψ-1-*p*-nitrophenyl-2-dichloroacetamido propane-1 : 3-diol. The synthetically prepared product appears to have the same useful properties as that produced by fermentation. It is simpler to synthesize than was penicillin and is relatively cheaper than the fermentation product.—E. M. J.

FELSENFELD, O., VOLINI, I. F., ISHIHARA, S. J., BACHMAN, M. C. & YOUNG, V. M. (1950.) **A study of the effect of neomycin and other antibiotics on bacteria, viruses, and protozoa.**—*J. Lab. clin. Med.* **35.** 428–433. [Authors' summary copied *verbatim.*] **1491**

Neomycin showed strong action in vitro and in vivo on gram-negative rods, tubercle bacilli, *Bacillus anthracis*, *Listeria monocytogenes*, and intestinal protozoa. It has a variable action on gram-positive cocci. It checked blood flagellates in high concentration in vitro. In vivo, experimental salmonellosis, cholera, tuberculosis, amebiasis, and rickettsialpox could be prevented by neomycin in adequate doses. The activity of neomycin was compared with that of penicillin, streptomycin, chloromycetin, aureomycin, polymyxin D, bacitracin, and enniatin III [an antibiotic prepared from *Fusarium oxysporum.*]

VELU. (1948.) La pénicillinothérapue et ses règles fondamentales. **[Fundamental principles of penicillin therapy.]**—*Rev. vét. milit.* **3.** 139–148. **1492**

A general discussion.—J. M. JACOBS.

BLISS, E. A., WARTH, P. T., CHANDLER, R. A. & LONG, P. H. (1950.) **Studies of terramycin *in vivo* and *in vitro*.**—*Johns Hopk. Hosp. Bull.* **87.** 171–180. [Authors' summary copied *verbatim.*] **1493**

Terramycin inhibited the growth of most of the bacteria tested at slightly lower concentrations than aureomycin. Oral administration of a single dose of terramycin HCl to two human subjects resulted in measurable levels of the drug in the blood and urine for at least 24 hours. Terramycin was more effective than aureomycin in the therapy of *K. pneumoniae* and *H. influenzae* infections in mice but was less effective in pneumococcal and haemolytic streptococcal infections.

DIERNHOFER, K. (1949.) Über Schutzmittel gegen Deckseuchen. **[Prophylactics against venereal diseases in cattle.]**—*Wien. tierärztl. Mschr.* **36.** 425–432. **1494**

Action of acridine derivatives and protargol on *Trichomonas* and on the usual bacteria encountered has only a limited value. Tubed ointment was more satisfactory than cones or pessaries for the bull.—ROY MACK.

TZSCHACHER, W. (1948.) Kann man Virus-erkrankungen durch chemische Mittel wirksam beeinflussen? **[Can virus diseases be effectively influenced by chemical means?]**—*Tierärztl. Umsch.* **3.** 396–398. **1495**

T. questions a statement by Flückiger that viruses are not influenced within the animal body by administration of chemical agents. T. claims success in the control of canine distemper with a formalin-producing drug and states that "mitisol" (containing camphor and turpentine) is of value in F. & M. disease.—E. G. WHITE.

SCHAFFENBURG, C., MASSON, G. M. C. & CORCORAN, A. C. (1950.) **Interrelationships of desoxycorticosterone, cortisone and vitamin C in the genesis of mesenchymal lesions.**—*Proc. Soc. exp. Biol., N.Y.* **74.** 358–362. [Authors' summary copied *verbatim.*] **1496**

Cortisone inhibits many of the manifestations of scurvy in the guinea pig while desoxycorticosterone aggravates the condition. These activities of the hormones probably depend on their action on mesenchymal tissues. The scorbutic guinea pig, untreated or treated with DCA [desoxycorticosterone], may be a valuable test subject for the assay of antiarthritic compounds.

STONE, R. E., SPIES, T. D. & NIEDERMEIER, W. (1950.) **Rheumatoid arthritis. Partial rehabilitation by interval therapy with A.C.T.H. and cortisone.**—*Lancet.* **259.** 555–560. [Authors' summary and conclusions copied *verbatim.*] **1497**

Seven patients with rheumatoid arthritis were treated at intervals over a period of twelve months with pituitary A.C.T.H. and synthetic cortisone acetate. In each case the symptoms improved after the injection of adequate amounts of either of these materials. In contrast, pregnenolone acetate, deoxycortone acetate and ascorbic acid, acetylsalicylic acid, and placebos produced no relief.

After the injections of cortisone or A.C.T.H. were discontinued the symptoms gradually returned. The longest period of relief following a series of injections was four and a half months. After each period of either cortisone or A.C.T.H. therapy the relief of symptoms was as great as that which followed the initial period, suggesting that the effectiveness of these hormones does not diminish in a year.

ATERMAN, K. (1950.) **Effect of cortisone on early fibrosis of the liver in rats.**—*Lancet.* **259.** 517–519. [Author's summary copied *verbatim.*] **1498**

Carbon tetrachloride causes hepatic fibrosis in rats. This change is inhibited if cortisone is given at the same time.

CASTOR, W. C. & BAKER, B. L. (1950.) **The local action of adrenocortical steroids on epidermis and connective tissue of the skin.**—*Endocrinology.* **47.** 234–241. [Authors' summary copied *verbatim.*] **1499**

The prolonged percutaneous application [to the skin of the neck of rats] of adrenocortical hormones modified the histology of the skin, the changes induced being limited to the area of treatment. The epidermis became thinner and, in males, the size of the epidermal cells was reduced. Growth of hair ceased and sebaceous glands became smaller. The thickness of the dermis was reduced, apparently due to loss of substance from the collagenous fibres, the elastic fibers remaining numerous in spite of the treatment. Fibroblasts and other cells of the dermal connective tissue were fewer in number.

The development of a state of refractoriness to the action of the hormones was demonstrated by the resumption in growth of hair in the area of application when treatment was continued for 180 days.

See also absts. **1247** (disinfectants); **1250** (5-nitro-2-furaldehyde semicarbazone); **1251** (sulphadiazine); **1261** (TB.); **1263** (DHS-PAS); **1264** (subtilin); **1279** (chloromycetin in typhoid fever); **1283** (aureomycin in brucellosis); **1303** (pentamidine in trypanosomiasis); **1308** (human trypanosomiasis); **1309** (antrycide); **1323** (blackhead); **1327** (thiouracil); **1329** (coccidiosis in turkeys); **1347** (failure of antibiotics in rabies); **1374** (formaldehyde fumigation against Newcastle disease); **1420** (emetine hydrochloride in muelleriasis); **1421** (filariasis); **1429** (cortical steroids in cancer); **1430** (X-irradiation in Rous sarcoma); **1447** (desoxycorticosterone in ketosis); **1448** (milk fever); **1473** (pest destruction); **1474–1475** (D.D.T.).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

ADRIAN, E. D. (1949.) **The Sherrington Lectures. I. Sensory integration.**—pp. 20. Liverpool: University Press. 1s. **1500**

As a result of Sherrington's work on the spinal reflexes, a wider study of nervous integration became possible, particularly with the introduction of the valve amplifier. It has become clear that the signals from the sense organs can reach frequencies as high as 500 per sec. depending upon the strength of the stimulus, and that sensory nerves have many terminal branches which supply two or more areas often widely separated. The brain can therefore form a small-scale map of what is happening at the sensory surfaces. This applies not only to touch but also to sight and sound and perhaps smell. The brain therefore receives a large number of sensory patterns which can be integrated and so provide an accurate picture of events taking place at the sensory surfaces, and the appropriate motor reactions can then be instigated. Between the sensory and motor reactions, however, there is the vast territory of the association areas, the activities of which are

for the most part unknown. Before a complete understanding of brain activity is possible, its two fundamental properties, *i.e.*, the power of memory and the power of abstracting relations, must become more fully understood.

—J. A. NICHOLSON.

LOUW, J. G., WILLIAMS, H. H. & MAYNARD, L. A. (1949.) **A new method for the study *in vitro* of rumen digestion.**—*Science*. **110.** 478–480. **1501**

A comparison between the *in vitro* digestion of cellulose by fresh ruminal fluid in a closed vessel and in a semi-permeable bag is recorded. The method of Marston was used but with certain modifications which are described. It was found that cellulose digestion was greater by the semi-permeable method than when a closed vessel was used. This is due to the fact that the non-gaseous fermentation products accumulate in a glass vessel, thereby slowing the rate of digestion.—J. A. NICHOLSON.

ATEN, A. H., Jr. & HEYN, C. B. (1950.) **Secretion of radio-calcium in milk.**—*Amer. J. Physiol.* **162.** 579–580. [Authors' summary copied *verbatim*.] **1502**

The secretion of radioactive Ca in milk was measured in a goat after the subcutaneous injection of radioactive calcium. The activity of calcium ions in the milk increased rapidly during the first hours following injection.

LOBIN, N. V. (1947.) **The influence of external temperature on metabolism in Leghorn cocks.** —*Dokl. Akad. seljskohoz. Nauk. Lenin.*, No. 9. pp. 11–13. [Abst. in *Anim. Breed. Abstr.* **16.** 155, (1948), slightly modified.] **1503**

White Leghorns were submitted to temperatures varying from —22° to +34° and metabolism measured in a respiration chamber. As the t° decreased gaseous metabolism increased until it was maximal at —17°, below which a hypothermal state was apparent; it was minimal at 15°–29°. There were similar variations in non-gaseous metabolism. Metabolism increased sharply with increases in t° from 30° to 34°, at which t° hyperthermic metabolic increases began. Fowls kept at +15° had 3·5 million erythrocytes as compared with 2·895 million at —2·5°. There was no significant variation in the haemoglobin content. It is concluded that the critical t° for White Leghorns is 17°, at which level of nutrition maintenance was 20·7 starch equivalents per kg. live weight.

GOLDBERG, L., GUNVALL, F., HAMMARSTEN, G. & LINDGREN, G. (1948.) **The determination of the diameter of the red blood corpuscles.**—*Acta med. scand.* **132.** 238–250. [In English. Abst. from authors' summary.] **1504**

An account of the use of the diffractometric method and direct measurement of red blood cells.

ROSSITER, R. J. & WONG, E. (1950.) **β-glucuronidase of rabbit polymorphonuclear leucocytes.**—*Canad. J. Res.* Sect. E. **28.** 69–79. [Authors' abst. copied *verbatim*.] **1505**

Rabbit polymorphonuclear leucoytes contain an enzyme capable of hydrolyzing biosynthetic phenolphthalein mono-β-glucuronide. The concentration of the enzyme in the white cell is some 2000 times the concentration of the enzyme in the blood plasma. Under the conditions of study, the β-glucuronidase activity was proportional to the concentration of the enzyme. The effect of substrate concentration on the enzyme activity was studied and the Michaelis constant, K_s, determined. The course of the reaction was linear with time for the first 12 hr. and then fell off slightly during the next 12 hr. The optimum pH of the enzyme was 4·45 in either 0·2 *M* acetate or 0·2 *M* phthalate buffer. It was not inhibited by cyanide, azide, iodoacetate, fluoride, glycine, thiourea, urethane, arsanilic acid, acetophenone, *o*-cresol or *m*-cresol, in a final concentration of 0·01 *M*. The possible function of β-glucuronidase in rabbit polymorphonuclear leucocytes is discussed.

QUICK, A. J. (1950.) **Clot retraction. Its physiological and clinical significance.**—*Amer. J. med. Sci.* **220.** 538–546. [Author's summary copied *verbatim*.] **1506**

Clot retraction was studied to determine its probable function in hemostasis and venous thrombosis. The reasons are discussed why it is unlikely that the organism employs the retraction of the clot as a mechanical means of effecting stanching of blood.

The possible role of clot retraction in thrombosis is presented. The initial clot, formed as the result of vascular damage which causes platelets to accumulate and disintegrate on contraction expresses a serum rich in nascent thrombin. If the circulation is sluggish the formation of a secondary clot about and attached to the primary coagulum occurs. By successive formation and retraction of the new clots, the thrombus is propagated. According to this concept, the factors which increase clot retraction should increase a tendency to thrombosis. With this objective the primary factors causing retraction were investigated.

A rise in the platelet count causes augmentation of retraction and clinically it is known to increase the thrombosing tendency. Conditions which bring about an accelerated formation of thrombin cause faster and greater clot retraction.

It may be postulated that it also increases the incidence of thromboembolism. By reducing the formation of thrombin, the tendency towards thrombosis is depressed. This is clinically accomplished by means of heparin and dicumarol. The inability of a fibrin clot to adhere to a non-wettable surface explains why an intravascular clot forms little or no attachments to healthy normal intima. Total blood cell volume is an important determinant of clot retraction.

In severe anemia retraction is both rapid and marked in extent. This suggests that anemia is a significant contributory factor in thrombosis and embolism, a fact verified by clinical observation. The importance of blood transfusion to correct anemia as a prophylactic measure against thromboembolism is stressed.

SUSSMAN, M. L. (1950.) **Skeletal changes associated with diseases of the blood.** *Bull. N.Y. Acad. Med.* **26.** 763–778. [Author's summary modified.] **1507**

The author reviewed what he considered to be the significant recent advances in the study of the skeletal lesions found in certain diseases of the blood. These new data suggest that, in the primary blood disorders, there are changes in the metabolic and enzyme systems, qualitatively and/or quantitatively specific for such disease, which alters the protein substrate available for bone formation and the physico-chemical conditions for calcium precipitation. It was suggested that the bone changes may, in certain cases, be a secondary tissue reaction based on these physico-chemical alterations rather than a purely cellular response to the adjacent disease process.

MERRILL, D. L. (1950.) **Mitral valvulotomy in the dog. An experimental study.**—*Johns Hopk. Hosp. Bull.* **87.** 21–35. [Author's summary copied *verbatim.*] **1508**

With the purpose of studying the relative tolerance to lesions at two different sites in the mitral valve in dogs, a method has been described by which the mitral ring may be exposed to direct vision without interruption of the circulation, and the valve cut at selected locations.

Two groups of animals were studied, one with lesions in the posterior valve leaflet and one with defects through the valve at the anterior commissure. In normal animals the most marked regurgitation with a high mortality from early post-operative pulmonary edema occurred when a major leaflet was divided completely through its central arc. Minimal signs of insufficiency with no immediate post-operative deaths attributable to pulmonary edema developed with lesions placed through the valve at the junction of the two leaflets.

These findings support the principle that division of the valve at the commissure produces less severe incompetence than division of a major leaflet. The site selected for valvulotomy is closely related to the problem of acute surgical mitral insufficiency and pulmonary edema.

DAVIES, J. & DAVIES, D. V. (1950.) **The development of the mesonephros of the sheep.**—*Proc. zool. Soc. Lond.* **120.** 73–93. [Authors' summary copied *verbatim.*] **1509**

The development and degeneration of the mesonephros of the sheep is described with particular reference to the curious glomerular structure occupying the cranial one-third of the organ and here referred to as the giant glomerulus. The giant glomerulus and in particular the cranial two tubules draining it on either side provide useful landmarks whereby corresponding regions may be compared at different ages. An attempt is made to analyse the factors which determine the form and relations of the definitive glomeruli and tubules. These factors include the early relations of the somitic stalks and nephrogenic cord, the precocity of growth and vascularization of the preglomerular tissue and the degree of overcrowding and overlapping of the tubule primordia.

The cellular activities of the mesonephric tubules are described and discussed and the view is upheld that these are of a peculiar secretory nature. The processes occurring in degeneration are outlined and the absence of the massive cranial degeneration described by Felix in man is commented upon.

DAVIES, J. (1950.) **The blood supply of the mesonephros of the sheep.**—*Proc. zool. Soc. Lond.* **120.** 95–112. [Author's summary copied *verbatim.*] **1510**

The extrinsic and intrinsic blood vessels of the mesonephros in the sheep have been studied with special reference to the so-called "giant glomerulus". The latter is precocious in its development as compared with the Malpighian bodies caudal to it. The angioblastic preglomerular tissue is the important factor in determining the shape and vascular connexions of the Malpighian bodies. The latter vary greatly in size and shape, possess multiple efferent vessels and show a marked degree of linkage and fusion together. The tubules are surrounded by a plexus of sinusoidal veins in which feature the mesonephros differs fundamentally from the metanephros.

The early vessels of the metanephros and the origin of the renal and spermatic arteries are briefly discussed.

ABBAS, T. M. (1948.) **The importance of external hysterography in the study of uterine activity.** —*Edinb. med. J.* **55.** 423–426. **1511**

External hysterography—the recording of uterine contractions in human beings through the medium of the abdominal wall—provides a simple mechanical method of studying the course of labour and the behaviour of uterine muscle under the influence of drugs. It is stated that it should be employed as a routine for the control of new drugs advocated for use during labour. —W. R. BETT.

HELLMAN, L. M., HARRIS, B.A., Jr. & ANDREWS, M. C. (1950.) **Studies of the metabolism of the human placenta. II. Oxygen consumption and anaerobic glycolysis in relation to aging and severe toxemia.**—*Johns Hopk. Hosp. Bull.* **87.** 203–214. [Authors' summary copied *verbatim.*] **1512**

A decrease in oxygen consumption and in anaerobic glycolysis was found in normal human placentas from the onset of pregnancy to term.

PARISI, O. (1949.) La durata della gravidanza nella specie bovina. **[The length of pregnancy in cows.]**—*Riv. Med. Vet. Zootec.* **1.** 102–114. **1513**

The average gestation period of 321 cows was 284·7 days with a standard deviation of 6·2 days. Male calves were carried for a mean period of 285·8 days, female calves for 283·8 days. This longer period of gestation associated with the male calf was most marked in first-calf heifers.—ALFRED T. COWIE.

PLAUT, G. W. E. & LARDY, H. A. (1950.) **Metabolism of ejaculated bull spermatozoa with particular reference to the glycolysis of maltose.** —*Amer. J. Physiol.* **162.** 598–602. [Authors' summary copied *verbatim.*] **1514**

Ejaculated bull spermatozoa which had been washed twice with saline and then suspended in Krebs' Ringer-phosphate buffer glycolyze maltose much more slowly than they do glucose or fructose. The average values for maltose and glucose were $Z_L^{N_2}=1{\cdot}5$ and $Z_L^{N_2}=39$, respectively.

Spermatozoa of a given ejaculate glycolyze maltose more rapidly when they have been washed only once than when washed twice. The addition of trace quantities of glucose or fructose or of small quantities of seminal fluid increases the ability of ejaculated spermatozoa to glycolyze maltose.

CHEATUM, E. L. (1949.) **The use of corpora lutea for determining ovulation incidence and variations in the fertility of white-tailed deer.**— *Cornell. Vet.* **39.** 282–291. **1515**

The gross anatomical changes occurring in the ovary of the white-tailed deer during the oestrous cycle are described.—ALFRED T. COWIE.

HAFEZ, E. S. E. (1950.) **Sexual season of the ewe and daylight environment.** [Correspondence.] —*Nature, Lond.* **166.** 822–823. **1516**

Scottish Blackface, Border Leicester, and Welsh Mountain sheep have a natural breeding season of 19 weeks' average duration, with 7 cycles per ewe, occurring when the length of daylight is about 12 hours or less. Romney Marsh and Suffolk ewes average 10 cycles spread over 26 weeks when the length of daylight is about 13 hours or less. Dorset Horn ewes have an average breeding season of 32 weeks with 13 cycles. Latitude and altitude of the district of origin of the breed influences the duration of the breeding season.—G. B. S. HEATH.

STARKE, N. C. (1949.) **The sperm picture of rams of different breeds as an indication of their fertility. II.—The rate of sperm travel in the genital tract of the ewe.**—*Onderstepoort J. vet. Sci.* **22.** 415–525. **1517**

Semen was collected by the electrical stimulation technique at fortnightly intervals from 18 rams of various breeds for a period of over one year and extensive investigations were made on semen volume ; sperm concentration, motility and morphology; relationship of semen picture to fertility and seasonal variations in spermatogenesis. It is concluded that when all the semen characteristics are considered an accurate prognosis of a ram's breeding potentialities is possible, but only after several examinations at weekly or fortnightly intervals. No definite correlation between volume of ejaculate and sperm concentration was found. Sperm concentration was highest in winter, lowest in summer. In general, however, rams giving bad sperm pictures and poor fertility were more readily affected by climatic conditions so far as sperm characteristics were concerned.

Seven Merino ewes were slaughtered at intervals of 1, 2, 3, 5, 18, 18 and 20 hours after natural service to study the morphology of the spermatozoa in the reproductive tract while a further 8 ewes were killed at intervals of 30, 24, 15, 10, 9, 8, 6 and 6 min. after mating to determine the rate of travel of spermatozoa. It was observed that the vitality of the spermatozoa was rapidly reduced in the vagina. The cervical canal appeared to be the most favourable site for their preservation, 40% of those in the

cervix being motile 20 hours after service. They appeared to accumulate in the cervix and to progress thence continuously in small numbers. Spermatozoa were present in the uppermost section of both fallopian tubes six min. after ejaculation, having travelled a distance of 45 cm.

—ALFRED T. COWIE.

HARDY, M. H. (1950.) **The development *in vitro* of the mammary glands of the mouse.**—*J. Anat.* **84.** 388–393. [Author's summary copied *verbatim.*] **1518**

Mammary glands developed *in vitro* in explants of the ventral body wall of embryonic mice; the tissue was cultivated in watch-glasses in a mixture of adult cock plasma and chicken embryo extract. Explants from 10-, 12- and 13-day embryos were cultivated for up to 25 days *in vitro*, and primary, secondary and later mammary ducts and a streak canal were formed. The gross structure, histological details, and rate of differentiation were similar to those in embryos and young mice, and the final stage reached was similar to that in a 7-day-old mouse. The experiments *in vitro* suggest that the early stages of mammary development in the mouse are not primarily dependent on specific hormonal stimulation or other influences from different parts of the body.

KINNUNEN, O. & NIEMINEVA, K. (1950.) **The foetal adrenals in maternal toxaemias. A study of the relative weights of the adrenals in foetuses of toxaemic and normal mothers.**—*Acta endocrinol.* **5.** 165–172. [In English. Authors' summary copied *verbatim.*] **1519**

The authors compare the relative weights (weight of organ/weight of foetus) of the adrenals, thymus and thyroid of foetuses of toxaemic mothers with the corresponding values for the foetuses of normal mothers. They find that no deviation from the normal can be observed, especially with regard to the adrenals, and also in the case of the thymus and thyroid.

MCDERMOTT, W. V., FRY, E. G., BROBECK, J. R. & LONG, C. N. H. (1950.) **Mechanism of control of adrenocorticotrophic hormone.**—*Yale J. Biol. Med.* **23.** 52–66. [Authors' summary slightly modified.] **1520**

By correlation with the fall in ascorbic acid level in the adrenal gland, the eosinopenic response in the peripheral blood has been shown to be an accurate and satisfactory index of the release of cortical steroids from the adrenal, although there is no evidence as yet that the initial level bears any constant relation to the functional capacity of the gland. The initial rise in eocinophiles following either the administration of exogenous epinephrine or the release of endogenous epinephrine is dependent on the contraction of the spleen. A slight but consistent eosinopenic response in adrenalectomized rats can be abolished by concomitant castration. This suggests either a slight overlap in the action of the gonadal and adrenal steroids, or the presence of functioning adrenal cortical cell rests in the gonads.

The mechanism of control of the secretion of the adrenal cortex, through the release of adrenocorticotrophic hormone from the pituitary, apparently consists of two phases which may be independent or sequential, depending on the conditions of stress encountered by the organism. These phases have been labelled *autonomic* and *metabolic*—terms which seem descriptive of their physiological characteristics. The first or autonomic phase depends on the reflex secretion of epinephrine which directly activates the anterior pituitary, while the second or metabolic phase is based upon the rate of utilization of adrenal cortical hormones within the organism. This concept is illustrated in a diagram.

STONER, H. B. & GREEN, H. N. (1950.) **Studies on the role of the adrenal cortex in adenosine triphosphate shock.**—*J. exp. Path.* **31.** 603–614. [Authors' summary copied *verbatim.*] **1521**

The role of the adrenal cortex in nucleotide shock has been studied in the rat. It was found that ATP [adenosine triphosphate] acts like other shock-inducing agents in causing the discharge of hormones from the zona fasciculata of the adrenal cortex as judged by histochemical tests. Derivatives of ATP have a similar effect in proportion to their shock-inducing potency, but $Na_4P_2O_7$ [sodium pyrophosphate] is not nearly as effective as ATP. The effect is not a direct one on the adrenal cortex, but is mediated through the adrenal medulla and hypophysis. The prevention of the response by adrenalectomy, medullectomy or hypophysectomy increases the animal's sensitivity to ATP. The protective action of the adrenal cortex is thought to be due to its glucocorticoid hormones. The results are discussed in relation to current theories on the mechanism of the adrenal response to body injury.

JAUFFRET, R. (1947.) Recherches anatomiques sur les buffles indochinois. **[Indo-Chinese buffaloes—anatomical research.]**—*Rev. Élev. Méd. vét. Pays trop.* **1.** 150–152. **1522**

J. shows the similarity of the structure of the buffalo with that of the ox and its differences from the horse. The only significant difference from the ox that he mentions is the long vomer bone completely dividing the nostrils.

—R. MACGREGOR.

See also absts. 1436 (bone formation); 1441 (action of vitamin A on bone); 1572 (atlas, blood and bone marrow); 1573 (book, cytology of blood); 1574 (book, physiology and animal behaviour).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

BURUIANA, L. M. & IDICEANO, A. (1949.) Sur la présence des nitrites dans le lait et leur signification. La détermination du "colititre" par réduction de nitrates. [**Estimation of coliform organisms in milk by reduction of nitrates.**]—*Lait.* **29.** 449–460. **1523**

Details are given of a method (based on the Griess-Ilosvay reaction) for the colorimetric determination of nitrites in milk by coupling the diazo compound, formed with sulphanilic acid in presence of acetic acid, with α-naphthylamine and comparing the colour produced with that given by a solution of $NaNO_2$ standardized against $KMnO_4$.

In tests of milk from Bucharest, close concordance was observed between the degree of reduction of the added nitrate and the *Bact. coli* content.—J. M. JACOBS.

WINTER, A. R., GRECO, P. A. & STEWART, G. F. (1946.) **Pasteurization of liquid-egg products. I. Bacteria reduction in liquid whole egg and improvement in keeping quality.**—*Food Res. Ill.* **11.** 229–245. [Abst. from abst. in *Bull. Hyg., Lond.* **25.** 166. (1950).] **1524**

Details are given of bacterial counts in tests made on 37 samples of commercial liquid whole egg examined before, and 27 of them after, pasteurization. With temperatures of 145° F. or higher, even for less than a minute, the standard plate count was reduced to less than 5,000 per ml. (a 99 per cent. reduction). At 145° F. there was some survival of coliform organisms, but none at 154° F. even with times as short as 0·1 to 0·2 minute. At 140° F. for 10 minutes, 144° F. for 6 minutes and 145° F. for 1 minute there were no coliform survivals, and there was always a reduction of bacteria greater than 99 per cent.

Pasteurization prolonged keeping time if the samples were held in a refrigerator, but not if held at room temperatures.

RIEVEL, H. & REUTER, H. (1950.) Untersuchungen über die Brauchbarkeit eines holländischen Pasteurisierungsverfahrens zur Abtötung gesundheitsschädlicher Keime in Enteneiern. [**The Dutch method of duck egg pasteurization.**]—*Lebensm Tierarzt.* **1.** 113–115. **1525**

In Holland, duck eggs are being pasteurized by heating in a water-bath to 60·2° C. for 47 min. This is alleged to render the eggs germ free, and to kill salmonella bacteria. It was, however, found that the change in the appearance of the egg-white of such pasteurized eggs rendered them unpopular and salmonella are not killed by this treatment.—H. DE BARTOS-RIVALIER.

ANON. (1950.) **Food poisoning in England and Wales, 1949. An anaylsis of reports received by the Ministry of Health from medical officers of health, and of weekly epidemiological reports submitted by directors of constituent and associated laboratories of the Public Health Laboratory Service and by bacteriologists in certain hospital laboratories.**—*Mon. Bull. Min. Hlth publ. Hlth Lab. Serv.* **9.** 254–269. [Summary copied *verbatim.*] **1526**

During 1949 new methods for the collection of information on food poisoning were brought into use; mainly as a result of this change the number of incidents reported rose to 2,431. There is intrinsic evidence that the total number of incidents that occurred was even higher.

Of the 2,431 reported, 1,753 were sporadic cases and 678 were outbreaks, of which 266 were family outbreaks. *Salm. typhi-murium* was associated with 1,043 incidents, other salmonellae with 326, staphylococci with 97, other organisms with 88, and chemical agents with 3; in 874 the causal agent was not determined.

The highest number of incidents occurred in the third quarter of the year and the lowest number in the first quarter. In 339 outbreaks and family outbreaks (50 per cent.) where the vehicle of infection was mentioned, 222 (65 per cent.) were due to meat dishes and 195 (88 per cent.) of these dishes were processed, made-up or reheated. No outbreaks were traced to fresh meat such as joints. No information of value was obtained on the source of infection in sporadic cases.

Salmonellae were associated with 307 outbreaks (45 per cent.), staphylococci with 89 (13 per cent.) and other organisms with 80 (12 per cent.); 199 (29 per cent.) were due to unknown causes. Sixty-seven per cent. of the outbreaks where the place of occurrence was known originated in canteens, restaurants and hotels; 44 (20 per cent.) occurred in hospitals and institutions, and as 30 of these were due to salmonellae it is probable that many of them were due to cross-infection and not primarily to food.

In only 5 per cent. of the outbreaks and 0·9 per cent. of the sporadic cases due to salmonellae was the incubation period stated. Since the length of the incubation period is of great value in helping to distinguish between different types of food poisoning a plea is entered for recording this as a routine in all reports of outbreaks and cases whatever the cause.

In 16 salmonella incidents, poultry or animals were the source of the infection; 5 were due to known symptomless excreters, and in 21

others symptomless excreters were found among food handlers examined, but most of them could have been victims and not the source of infection. Information on the number and types of salmonellae isolated from 1922–49 is given in tabular form; the proportion of "exogenous" types has decreased since 1943 and reasons for this are discussed. Some information was obtained on symptomless excreters of salmonellae, on unusual manifestations of salmonella infection, on the value of phage-typing in staphylococcal outbreaks, and on the occurrence of a characteristic clinical syndrome associated with heat-resistant strains of *Cl. welchii* (Type F) in meat dishes. Four outbreaks are described in which canned meat, contaminated with *Staph. aureus* or *Cl. welchii* during the process of manufacture, was responsible.

The need for detailed painstaking inquiries into the sources of infection of sporadic salmonella cases is stressed. Though the final aim must be to prevent the contamination of food with pathogenic organisms, it is believed that a substantial decrease in the number of outbreaks would be effected by changing the methods of cooking for large numbers in canteens and hotels; if food cannot be cooked and eaten on the same day it should be cooled rapidly in special apparatus, refrigerated at about +4° C. and if reheated should be brought to boiling temperature or higher.

Since most food-poisoning outbreaks follow the ingestion of food in which bacteria have multiplied abundantly, it is probable that no single step would contribute so much to the prevention of food poisoning as the provision of universal refrigeration.

RIVERA, M. G. (1949.) Instituto de salubridad y enfermedades tropicales de Mexico: diez años de trabajo. **[Institute of Public Health and Tropical Diseases of Mexico; ten years of work.]**—*Bol. Ofic. sanit. pan-amer.* **28.** 702–713. [Abst. from English summary.] **1527**

The Institute of Public Health and Tropical Diseases was organized in Mexico in March 1939, as a centre devoted exclusively to scientific research.

The Salmonella Centre of Mexico has its headquarters in the Institute, and the Virus Laboratory, about to be completed, will also form part of the Institute. The Department of Protozoology has a well organized library.

KELSER, R. A. (1950.) **Status of veterinary education in the United States.**—*Irish vet. J.* **4.** Febr., 2–9; & March, 45–47. [The pagination of the February issue of this journal is wrong. Instead of pp. 1–20 the numbers should be 21–40.] **1528**

This address to the Veterinary Medical Association in Dublin contains a broad review of present-day veterinary education in the U.S.A. and a description of the measures taken with regard to the recent outbreak of F. & M. disease in Mexico.

There were no properly-organized veterinary schools in the U.S.A. prior to 1855. The oldest surviving school is at the Iowa State College, established in 1879. There are at present 17 veterinary Colleges, of which ten existed before the second world war. Students are required to have done at least two years of pre-veterinary work at an approved post-high school college of arts and sciences. Buildings and equipment have gradually improved, and facilities are now adequate, although just at present it is being found diffcult to staff the newly-founded schools. With the exception of that at the University of Pennsylvania, all the schools are supported almost entirely by State appropriations.

The total hours in the four-year course in veterinary medicine (3,600–4,200) are allocated approximately as follows: Anatomy, including histology and embryology, 18%; physiology and biochemistry, 7·5%; pathology, bacteriology and immunology, 15%; parasitology, 4·5%; materia medica and pharmacy, 4·5%; surgery (excluding clinics) 6%; obstetrics (excluding clinics) 2%; medicine (excluding clinics) 8%; clinics, 20%; miscellaneous and electives, 14·5%. All the schools award an academic degree, and most schools provide opportunities for post-graduate work. The number of students applying for admission has greatly increased. War veterans are subsidized according to their length of service.—E. COTCHIN.

See also absts. **1278** (*S. breslau* food poisoning); **1410** (cysticercosis of impala); **1556** (visit to Argentina); **1563** (report, Hannah Dairy Research Institute).

LIVESTOCK HYGIENE

KÖHNLEIN, J. (1949.) Die Abhängigkeit der Gesundheit des Milchviehes von der Gesundheit des Bodens. **[Cattle health and soil.]**—*Milchwissenschaft.* **9.** 312–316. **1529**

Soil deficiencies arising from climatic or industrial factors are discussed in relation to plant health and consequently to animal health. Improvement of poor soils with fertilizers con-

taining lime, potash, phosphoric acid and nitrogen is not enough because lack or surplus of one or more of the trace elements may cause serious disturbances in herbivorous animals affecting their general thriftiness, fertility and lactation.—E. G.

See also absts. **1256** (TB. in animals and sanitary conditions); **1374** (fumigation against Newcastle disease); **1404** (parasitic disease in rural districts).

REPRODUCTION AND REPRODUCTIVE DISORDERS

VOGLER, G. (1950.) Zwei Jahre künstliche Befruchtung im Pinzgau. [**Artificial insemination in Austria.**]—*Wien tierärztl. Mschr.* **37.** 209–215. **1530**

A description of the methods used during the first two years of working of the insemination centre at Bruck in Pinzgau.—ALFRED T. COWIE.

SOBEK, V. (1950.) Zdravotní analysa u býků užívaných k inseminaci. [**General supervision of the health of bulls used for artificial insemination.**]—*Čas. československ. Vet.* **5.** 404–405. **1531**

Careful examination of breeding bulls in respect of general health, resistance to infections and health of the genital organs and of the nervous system is advocated.—E. G.

KAFKA, H. (1950.) **The ratio of male and female calves produced by natural breeding and artificial insemination.**—*J. Amer. vet. med. Ass.* **117.** 454–455. [Author's summary copied *verbatim.*] **1532**

The sex ratio of calves is tabulated according to sires used for natural breeding, artificial insemination, and for both. The data obtained demonstrated a sex ratio in favor of female calves (51·61 : 48·39) when natural breeding methods were used; in favor of male calves (53·4 : 46·6) with artificial insemination. This unequal sex ratio was traced to specific sires of all groups.

BANE, A. (1950.) Untersuchungen über die Toxizität des Gummimaterials gegen Bullenspermien. [**Toxicity of rubber for bull spermatozoa.**]—*Dtsch. tierärztl. Wschr.* **57.** 325–327. **1533**

Having tested the effect of various types of rubber on the viability of spermatozoa in semen collected from six bulls, both by the slide and cover glass and by the Clare-Harvey method, B. concluded that newly manufactured latex rubber, of the type used in artificial vaginas, exerts a toxic action. This effect was not produced by latex which had been stored for some time, nor by vulcanized rubber.

While this led the author to advise against the use of newly manufactured latex rubber in artificial vaginas, he also found that the toxic substance can be removed by extraction for four days with either 96% alcohol, soap solution or distilled water; this made the material safe to use.—G. P. MARSHALL.

TOSIC, J. & WALTON, A. (1950.) **Metabolism of spermatozoa. The formation and elimination of hydrogen peroxide by spermatozoa and effects on motility and survival.**—*Biochem. J.* **47.** 199–212. [Authors' summary copied *verbatim.*] **1534**

During aerobic metabolism of washed suspensions of bull spermatozoa in egg-yolk medium, a potent inhibitor of respiration and motility is formed. The inhibition is reversed by catalase and peroxidase, but not by heat-inactivated catalase, cytochrome *c*, haematin or ferrous ion. The inhibitor, which is not initially present in the egg yolk, is formed in the presence of molecular oxygen from a substrate present in the egg yolk and in its dialysable portion, but not in the non-dialysable fraction. The dialysable substances of the egg yolk have been fractionated by treatment with organic solvents and the fractions tested for their effects upon oxygen uptake and motility, and examined chemically. The inhibitor was identified chemically as hydrogen peroxide, and was shown to be formed simultaneously with ammonia, as the result of an oxidative deamination by the spermatozoa of a component of one fraction. The fraction was replaceable with the same effect by L-phenylalanine, L-tyrosine and L-tryptophan, but not any of ten other amino-acids tested.

Hydrogen peroxide has also been detected as a metabolic product of living spermatozoa of the boar and ram. The toxicity of the low concentrations of hydrogen peroxide formed in metabolism has been confirmed by adding comparable amounts of hydrogen peroxide to suspensions of spermatozoa. Hydrogen peroxide has a toxicity comparable to phenyl mercuric acetate which is the most toxic spermicide known. The formation of toxic concentrations of hydrogen peroxide is related to the small hydrogen peroxide decomposing activity of semen, and the latter has been compared in different species for whole semen, seminal plasma and washed cells. Washed cells and plasma are both active. Heating to 82° for 15 min. almost entirely destroys the activity, indicating that the latter is enzymic

(catalase). These findings have been discussed in relation to preservation of spermatozoa *in vitro* and their survival *in vivo*.

BRAZEL, E. (1950.) Neuer, beschleunigter Trächtigkeitsfrühnachweis bei Stuten. **[Early pregnancy diagnosis in mares using a male frog.]**—*Dtsch. tierärztl. Wschr.* **57.** 62–65. **1535**

A description of the technique of the male frog or toad test for detecting gonadotrophins. —ALFRED T. COWIE.

MESCHAKS, P. (1950.) **Antimony trichloride colour reaction as a pregnancy test in the urine of pregnant mares. Preliminary report.**—*Nord. Vet. Med.* **2.** 642–645. [In English: German summary, author's English summary slightly modified.] **1536**

The neutral steroids in urine of pregnant mares at the time of the development of the placenta undergo some qualitative changes which can be demonstrated by the $SbCl_3$ reaction. The $SbCl_3$ reaction may be used as a pregnancy test in mares from about the 120th day of pregnancy up to the birth. The substance in pregnant mares' urine reacting with $SbCl_3$ is an alcoholic non-ketonic steroid which, photometrically, shows similarity with Δ^5-androstenediol, and to some extent with pregnandiol.

INGELMAN-SUNDBERG, A. (1950.) **Abruptio placentae in guinea pigs following treatment with oestrogen.**—*Acta endocrinol.* **5.** 54–60. [In English. Author's summary copied *verbatim.*] **1537**

In order to investigate whether oestrogenic hormone could produce placental changes in guinea pigs similar to those found in vitamin E deficiency, varying amounts of oestradiol monobenzoate were injected subcutaneously every third day from the 6th day of pregnancy in guinea pigs reared on a natural diet. The administration of 1·2 γ oestradiol monobenzoate had usually no effect on the pregnancy but when the dose was raised abortion generally occurred. It was found that the larger the dose the earlier abortion occured. The abortion was caused by placental changes identical with those found in vitamin E deficiency. Further experiments are, however, necessary before it can be clearly demonstrated that an oestrogenic action is the ultimate cause of abortion in vitamin E deficient guinea pigs.

DICZFALUSY, E., HOLMGREN, H. & WESTMAN, A. (1950.) **The action of human chorionic gonadotrophin preparations on the adrenals and testicles of hypophysectomized immature rats.** —*Acta endocrinol.* **5.** 43–53. [In English. Authors' summary slightly modified.] **1538**

In the absence of the testes, massive doses of crystalline HCG [human chorionic gonadotrophin] cause no increase in the weight of the adrenals and no restoration of the secondary sex organs. HCG produces only a moderate increase in testis weight, even when administered in excessive doses. It induces no spermatogenesis — and no spermatid formation — and does not restore the testicular tubles in rats hypophysectomized at the age of 22 days, when treatment is begun on the 3rd day after hypophysectomy.

EMMENS, C. W. (1950.) **Recovery from oestrogen-induced sterility in albino mice.**—*J. Endocrinol.* **7.** 31–41. [Author's summary copied *verbatim.*] **1539**

Male albino mice were rendered sterile by the injection of 2.5–40 μg. of oestradiol benzoate in nut oil B.P. twice weekly. Seven out of eight mice were sterile after 6 weeks of injections of 10 μg. Testicular damage was seen histologically in some males, and a highly significant weight loss occurred in the testes of all groups. These effects rapidly disappeared when injections ceased, and full fertility and normal testicular weight were regained. The control groups of males in these tests, while showing no testicular abnormalities, lost fertility to some extent when injected with either nut oil or physiological saline. This loss was also regained when injections ceased.

Female albino mice were rendered sterile by the injection of 0·5–12·5 μg. of oestradiol benzoate in nut oil twice weekly for 4 weeks. Even the lowest dose caused complete sterility during the period of injections and for 2 weeks thereafter. Recovery from all dose levels was apparently complete, although mice receiving 12·5 μg. took from 41 to 125 days to produce a litter when injections were stopped.

YILDIRAN, C. (1949.) **Spermatolysis: A cause of male sterility.**—*Brit. med. J.* April. 2nd. 575–576. **1540**

In five out of 75 cases of males complaining of sterility the author noticed that spermatolysis was present; within six hours the spermatozoa in collected semen had undergone lysis. Further the prostatic fluid of two of these cases resulted in lysis in the seminal fluid of normal controls. He considered that a substance " spermatolysin " was present in the prostatic secretion and that in the five cases reported spermatolysis was the cause of sterility.—JAMES H. HALE.

GARM, O. & MESCHAKS, P. (1949.) **Investigations on the urinary androgen excretion in endocrinely normal non-pregnant cows and in**

cows with adrenal virilism.—*Nord. Vet.-Med.* **1.** 967–974. [English summary. Abst. from authors' summary.] **1541**

According to Fussgänger's capon comb method the authors have carried out quantitative determinations on biologically active urinary neutral steroids in normal heifers of normal endocrine function, fertile non-pregnant cows and on 6 cases of adrenal virilism.

In the normal animals with normal endocrine function the average amounts of urinary androgens were 0,18 ± 0,041 I.U. per litre and in the animals with adrenal virilism 0,70 ± 0,119 I.U. per litre. The difference between the two groups regarding the urinary androgen excretion was highly significant statistically ($P < 0,001$).

In view of the large amount of chemically demonstrable neutral steroids (13–37 mg. per litre) found by Meschaks in the same material of cows, affected with virilism, the results of the present investigation seem to indicate that in the cow most androgens of adrenal origin are converted within the organism into steroids with very little biological potency, or that the slight effect of the urinary neutral steroids is due to the presence of neutral steroids which inhibit the biological effect of the others. In the cow chemical determinations of urinary steroids therefore yield more valuable information regarding endocrine function than biological assays of urinary androgenic substances.

DE LANGE, M. (1950.) **The influence of delayed breeding on the fertility of beef heifers.**—*Onderstepoort J. vet. Sci.* **24.** 125–354. [Author's summary copied *verbatim.*] **1542**

Twenty-five beef heifers were subjected to delayed breeding up to ages varying from four years to five years eight months. Observations on body-weights, age of sexual maturity, the periodicity and duration of oestrus and the results of mating are recorded. Seven heifers bred successfully, while the remainder showed extensive disturbances in sexual activity. The changes occurring in the genital tract during the normal sexual cycle and during pregnancy are described. Profound functional and structural changes were observed in the genitalia of the majority of animals, leading to abortion, functional sterility, nymphomania and anaphrodisia. Correlative macroscopical and histological changes were observed in the anterior pituitary, thyroid and adrenals of normal and affected animals. The genesis of sterility in relation to delayed breeding in the light of the structural and physiological alterations observed, is discussed.

KLIESCH, J. & SCHWOCHOW, K. (1949.) Zur Frage der Vererbbarkeit von Krankheitsanlagen. **[Hereditary diseases of animals.]**—*Mh. Vet.-med.* **4.** 186–191; & 215–219. **1543**

The authors review articles and dissertations which have indicated that certain diseases of animals, or certain forms of them, are inherited, either as such, or as a constitutional or anatomical or other predisposition. The conditions dealt with are:—in horses: roaring, broken-wind, dummkoller (idiopathic form), an apparent example of inherited predisposition to encephalomyelitis, hereditary ataxia of Weischer, periodic ophthalmia, epistaxis, rickets, various skin and hoof conditions, diseases such as spavin and gonitis; in cattle: spastic spinal paralysis of Langsenkamp, and tuberculosis; in pigs: snuffles; in dogs: haemophilia in greyhounds in the Dutch East Indies.

Some of the articles are dealt with at some length and the bibliography, referring to theses as well as to journals, may be found useful by those interested.—E. COTCHIN.

KOCH, P. (1950.) Neuere Erkenntnisse auf dem Gebiete der Erbpathologie der Haustiere. **[New knowledge of hereditary disease in animals.]**—*Mh. Vet.-med.* **5.** 157–158. **1544**

K. refers to or briefly describes examples of the following conditions some of which have previously been reported by himself or by others: hereditary spinal muscle atrophy in dogs (Stockard); congenital paralysis in piglets from a Cornwall sow; hereditary paralysis in rabbits (Nachtsheim); congenital tremor in White Leghorn fowls; tremors in Simmental calves in Switzerland, and in piglets in many German piggeries; epistaxis in thoroughbred horses; haemophilia in dogs; leucosis in cattle; retarded growth in calves; spastic paresis in a calf; schistosomus reflexus in a foal; absence of lumbar dorsal spinal processes in a calf.
—E. COTCHIN.

WIGGINS, E. L., CASIDA, L. E. & GRUMMER, R. H. (1950.) **The incidence of female genital abnormalities in swine.**—*J. Anim. Sci.* **9.** 269–276. [Authors' summary copied *verbatim.*] **1545**

The incidence of gross genital abnormalities was studied in 5,088 gilts and sows at a local packing plant. The incidences of various abnormalities were: tubal abnormalities (bursitis and hydrosalpinx), 1·4%; cystic follicles plus corpora lutea, 1·1%; cystic follicles without corpora lutea, 0·6%; missing parts, 0·7%; double parts, 0·1%; and rudimentary male ducts (computed on 3,476 animals), 8·9%. The incidence of tubal abnormalities and of both types of cystic ovaries varied significantly with reproductive history and weight of the animal and

with season of the year. The incidence of missing parts and double parts was not associated with these factors. The incidence of male ducts was not significantly associated with reproductive history of the animal.

RASBECH, N. O. (1950.) To tilfaelde af partus serotinus hos koen i forbindelse med misdannelse af fosteret. **[Two cases of prolonged pregnancy in cows with malformation of the foetus.]**—*Nord. Vet.-Med.* **2.** 122–130. [English and German summaries. Abst. from English summary.] **1546**

The average normal duration of pregnancy in the cow varies only within narrow limits according to the breed and nutrition of the animal, climatic conditions and other factors. The extreme limits are given roughly as 240 and 320 days, respectively, but cases are recorded in the literature up to 413 days. In some cases of abnormal prolongation of the gestation period the calves are born normal but of excessive size.

Sometimes an abnormal prolongation of the gestation period is associated with malformation of the foetus. In one case of this kind pregnancy is reported to have lasted 448 days.

A description is given of two cases of prolonged duration of pregnancy, in one of which pregnancy lasted 420 days, the calf being of the "bulldog" type. In the other case pregnancy lasted 425 days, and at birth the calf presented considerable osteochondrodystrophic changes.

See also absts. **1432** (rabbit sterility and soya bean hay); **1437** (ovarian hormones and calcium metabolism); **1439** (carotenoids and reproduction); **1511** (hysterography); **1513** (duration of pregnancy); **1514** (metabolism of spermatozoa); **1515** (corpus luteum); **1516** (sexual season of ewes); **1517** (ram semen and fertility).

ZOOTECHNY

BAKER, A. L. & BLACK, W. H. (1950.) **Crossbred [Zebu] types of beef cattle for the Gulf Coast region.**—*Circ. U.S. Dep. Agric.* No. 844. pp. 23. **1547**

European beef cattle do not thrive in a damp warm climate, but zebus, either Brahmin or Afrikander, thrive but do not make satisfactory carcasses. At the Iberia Livestock Experiment Farm the results of crossing Aberdeen-Angus with Brahmin and Afrikanders were examined, and it was found that good carcasses were made by calves born of first cross Angus and Brahmin cows mated to three quarter Angus, one quarter Brahmin bulls. Afrikander crosses were not so satisfactory. The milk yield of the cows showed no improvement, but the rate of growth and final carcass yield was eminently satisfactory.

—R. MACGREGOR.

FRAPS, R. M. & OLSEN, M. W. (1950.) **Survival of day-old chicks under conditions of simulated high-altitude transport.**—*Poult. Sci.* **29.** 829–832. [Authors' summary copied *verbatim.*] **1548**

Day-old chicks at 90°–92° F. withstand reduced atmospheric pressures corresponding to altitudes of 20,000 feet for 16 to 20 hours. For shorter periods, at least, simulated rates of ascent and descent up to 5,000 feet per minute are tolerated. Altitude equivalents of 25,000 feet result in losses at 90°–92° F., but no losses occurred in a single test run at 73°–75° F. No untoward effects of treatment were observed in chicks carried under normal maintenance conditions for 4 to 14 days subsequent to test.

WILSON, W. O. & EDWARDS, W. H. (1950.) **Temperature, oxygen and carbon dioxide inside chick boxes at various room temperatures.**—*Poult. Sci.* **29.** 852–857. [Authors' summary copied *verbatim.*] **1549**

Day-old White Leghorn cockerel chicks were placed in chick boxes and observations were made on temperature, carbon dioxide and oxygen at temperatures of 72°, 90°, and 100° F. Under the conditions of these tests the following conclusions were drawn: (1) The lack of oxygen and the accumulation of carbon dioxide was shown not to be a factor in mortality of the chicks. (2) When chick boxes were sealed for 24 hours no harmful effects were observed at room temperatures below 90° F. At 100° F. room temperature mortality resulted in sealed boxes when the temperature within the compartments of the box exceeded 106° F. (3) Overheated chicks showed greater mortality and slower gains in weight for the first eight days than did the unheated controls.

LAING, A. D. M. G. (1950.) **Methods of marking lambs and precautions to be observed.**—*N.Z. J. Agric.* **81.** 197, 199; & 201–202 **1550**

Ear marking, docking of tails, and castration of male lambs are all included in the term "lamb marking", and are all performed at the same time, preferably when the lamb is about three weeks old. Increased danger of fly strike makes it inadvisable to mark during hot weather and cold windy weather lowers the lambs' resistance to infection with *Erysipelothrix rhusiopathiae.*

Tail docking is done by means of the knife, searing iron, or rubber ring; the knife is the most desirable method. Castration is also best done with a knife, although rubber rings and bloodless castrators are still used. Details of methods and of undesirable sequelae which may occur are given.—G. B. S. HEATH.

TECHNIQUE AND APPARATUS

GUCKER, F. T., Jr. & O'KONSKI, C. T. (1949.) **Electronic methods of counting aerosol particles.** —*Chem. Rev.* **44.** 373–388. [Abst. from abst. in *Bull. Hyg., Lond.* **24.** 991. (1949). Signed: R. E. O. WILLIAMS.] **1551**

A narrow stream of the aerosol, surrounded by a flowing " sheath " of pure air, is sucked at a rate of 1 litre per minute under an area of intense dark-field illumination. Particles more than about 0·6 micron in diameter scatter light in such a way that it strikes a photoelectric cell, which is protected from the direct light. Electronic counters estimate the number of particles from the number of flashes of scattered light. The upper range of the counter is 1,200 particles per minute.

FERRY, R. M., FARR, L. E., Jr. & HARTMAN, M. G. (1949.) **The preparation and measurement of the concentration of dilute bacterial aerosols.**—*Chem. Rev.* **44.** 389–417. [Abst. from abst. in *Bull. Hyg., Lond.* **24.** 991–992. (1949). Signed: R. E. O. WILLIAMS.] **1552**

The authors have made quantitative studies of clouds of air-borne bacteria under three heads: the generation of uniform clouds, the measurement of the concentrations in such clouds, and the collection and enumeration of viable bacteria in the clouds. Details of the technique are given.

AMMERMAN, F. (1950.) **A chrome-alum preparation for delicate and difficult fixations.**—*Stain Tech.* **25.** 197–199. [Abst. from abst.] **1553**

A chrome-allum fixative is recommended as a reagent for general use. The basic formula is: C.P. chrome-alum, 3 g.; 40% formaldehyde, 30 ml.; glacial acetic acid, 2 ml.; distilled water, 238 ml. Fixation should not exceed two hours or the material being fixed will swell. Rinses of 70% alcohol or water may follow the fluid. The fluid keeps well, does not harden tissues and gives good cytological detail.

WOOLF, B. (1950.) **Labour saving methods in cell counts.**—*Edinb. med. J.* **57.** 536–546. [Author's summary copied *verbatim.*] **1554**

A method of differential cell counting is described, which involves sampling the more common type of cell in a smaller area than the rare type. When there are great disparities in the relative frequencies, enormous economies in time and labour are possible. Full practical instructions are given, including tables and formulae for finding easily the standard deviation of the result of the count.

LIPS, H. J. & MCFARLANE, W. D. (1950.) **Evaluation of antioxidant activity by stabilization of vitamin A and carotene.**—*Canad. J. Res.* **28.** 157–165. [Authors' abst. copied *verbatim.*] **1555**

Accelerated tests for antioxidant activity are described which depend on the protection of vitamin A concentrates (in ethylene dichloride solution) against ultraviolet irradiation, and on the protection of carotene (in mineral oil solution) against heat and aeration. The protection of vitamin A was influenced by light-filtering effects; the carotene method appeared to be more generally useful. The stabilizing power of wheat-germ oil for both solutions of Vitamin A and carotene against light is partly due to a screening effect by pigments. Some of the protection is also due to other components of the wheat-germ oil, but it is not known whether these function as stabilizers against light according to the usual theories of antioxidant action. Light-accelerated decomposition of vitamin A and carotene appeared more suitable for special tests than for general evalution of antioxidants; stability experiments in the absence of light gave a more generally applicable picture of antioxidant activity.

See also absts. 1248 (machine milking and mastitis); 1259 and 1262 (TB. diagnosis by culture methods); 1310 (thymol test); 1357 (influenza virus cultivation); 1367 (rapid diagnosis of contagious canine hepatitis); 1466 (stomach surgery in dogs); 1535–1536 (pregnancy diagnosis); 1561 (method for identification of blood donors).

MISCELLANEOUS

ANDRES, J. (1949.) Land- und Tierwirtschaft—Veterinärdienst — Tierseuchen — Schlachthofwesen—Export. [**Agriculture, husbandry, veterinary service, epizootics, abattoirs and export in the Argentine.**]—*Schweiz. Arch. Tierheilk.* **91.** 494–518. **1556**

A clear account, with statistics and illustrations, of a visit to Argentina.—ROY MACK.

EARLE, I. P. (1950.) **Compression of complete diets for horses.**—*J. Anim. Sci.* **9.** 255–260. [Author's summary copied *verbatim.*] **1557**

A report is made of some exploratory trials in the compression of mixtures of chopped hay and whole grain into cakes suitable for feeding horses. The results indicate that the kind of forage used in the mixture is important in determining the conditions of temperature and pressure required for the production of satisfactory cakes. Cakes with a specific gravity of 1·0 were produced from an alfalfa hay mixture at a temperature of 120° C. with a pressure as low as 500 pounds per square inch. However, when timothy hay was substituted for alfalfa this pressure was inadequate even though the amount of binder was increased and the time of compression lengthened. Cakes with a specific gravity of 0·69 to 0·82 were produced from a timothy hay mixture at a temperature of 53° C. with a pressure of 3,000 pounds per square inch.

BAGUE, J. (1948–1949–1950.) Glosario de biologia animal. **[Glossary of animal biology.]** —*Alm. Agric., Puerto Rico.* pp. 143–309. [In English and Spanish.] **1558**

This glossary, prepared as an aid to Porto Rican students who acquire their scientific training in the universities of the U.S.A., contains over 2,600 English terms with their Spanish equivalents and synonyms. The author acknowledges in his introduction various well known standard scientific dictionaries and encyclopaedias as sources and gives 19 references. The English used in the explanations is not always perfect and the print is of rather poor quality. The book should nevertheless fulfil its purpose. [No reason is given for the paging starting at page 143.]—F. E. W.

BURCH, G. E., THREEFOOT, S. A. & RAY, C. T. (1950.) **Rates of turnover and biologic decay of chloride and chloride space in the dog determined with the long-life isotope, CL^{36}.**—*J. Lab. clin. Med.* **35.** 331–347. [Abst. from authors' summary.] **1559**

The concentration-time course in the blood serum and turnover rates within the body in acute experiments and the concentration-time course, time course of excretion in the urine and feces, and turnover rates for the entire body were studied in six normal dogs observed continuously for eighteen to thirty-one days under controlled metabolic conditions with long-life radiochlorine, Cl^{36} ($t\frac{1}{2}$ about 2×10^6 years), as a tracer substance.

These experiments indicate that: *a.* The chloride space is larger than previously reported. *b.* Chloride space is not a measure of the extracellular fluid space. *c.* Chloride is present in considerable quantities outside the extracellular fluid space. *d.* A man weighing 70 kilograms would have to consume 43 Gm. of NaCl daily to have a dietary intake of this salt comparable to that of an average dog. *e.* A diet of 200 mg. of sodium for a man weighing 70 kilograms is equivalent to a diet of 13 mg. for a dog weighing 4·54 kilograms (10 pounds). Thus the usual studies of low sodium metabolism in small animals with hypertension must be evaluated cautiously. A man of 70 kilograms must consume 15 to 22·5 pounds of food daily to take in equivalent quantities of the same food substances as a normal dog of 4·54 kilograms (10 pounds).

The importance of these experiments in the planning of tracer studies with chloride and bromide and understanding metabolism and excretion of chloride and bromide, bromide therapy and intoxication, edematous states, intoxication due to radiochloride and radiobromide in atomic warfare, and other physiologic processes is evident from the data.

BUETTNER, K. (1950.) **Effects of extreme heat on man.**—*J. Amer. med. Ass.* **144.** 742. [Author's summary copied *verbatim.*] **1560**

Large scale conflagration and the heat flash of the atomic bomb not only add to the known dangers of fire but produce entirely new hazards. The laws of heat exchange from fire to man and those of his main physiological responses are briefly discussed. In addition to carbon monoxide poisoning and the many hazards caused by the vastness of the destruction, radiant heat is of the utmost importance. Hazards from intense heat can be thoroughly averted by use of aluminium-coated protective clothing.

HOYT, A., DEMONTESQUIOU, M., VELDEE, M. V. & ALBURGER, J. R. (1950.) **Identification of blood donors with a fluorescent dye.**—*J. Lab. clin. Med.* **35.** 634–636. **1561**

Many donors wish to give blood at intervals so frequent as to be unhealthy. A partial solution to this problem has been found in marking donors with an "invisible" dye, CS-20—a solution of a fluorescent chemical mixture in an isopropanol and water base. The dye is swabbed on to a selected finger, on the left hand, at the junction of the nail with the cuticle, where penetration and retention are such that fluorescence can be detected almost invariably three weeks later and often more. A viewing box has been designed, illuminated by ultraviolet light from a suitably filtered, high intensity, mercury vapour lamp. Every prospective donor must insert his left hand in this before being accepted for bleeding.—L. M. MARKSON.

REPORTS

GREAT BRITAIN. (1950.) **The Lister Institute of Preventive Medicine. Report of the Governing Body, 1950.**—pp. 13. London: The Institute. **1562**

The Blood Products Unit, the Blood Group Research Unit and the Blood Group Reference Library (formerly Ministry of Health) are still accommodated at the Institute.

Work on *Haemophilus pertussis* revealed that the mouse protective antigen is distinct from the other known antigens, such as the Phase 1 agglutinogen and the haemagglutinin of Keogh and North.

Studies on *Trichomonas* in cattle have been continued; the inhibition of the skin reaction in cattle naturally or artificially sensitized against *Trichomonas* antigen has been further extended by experiments with a synthetic antihistamine "phenergan". The response of very young animals to vaccination with *Trichomonas* antigen is being studied with particular reference to the relation between the rise in titre and the disappearance of antibody received passively from the maternal colostrum. There seems to be a tendency for the appearance of the new active antibody to be delayed until most of the maternal antibody has disappeared.

Vaccinia virus, streptococcal capsulation and virulence, plasma substitutes and specific antisera were also studied.

The main work of the Blood Group Research Unit (Race, R.) has been the testing of some 400 persons for all the known blood groups. The serological independence of certain of the groups, previously assumed but not proved, was established. Immunization of about 100 of these volunteers has been started in the hope that some of them may produce new antibodies or antibodies the existence of which is to be expected for theoretical reasons.—D. S. RABAGLIATI.

GREAT BRITAIN. (1950.) **Report of the Hannah Dairy Research Institute for the three years ending 31st March, 1950.**—pp. 30. Kirkhill, Ayr: The Hannah Dairy Research Institute. **1563**

Milk production in Britain is estimated as being 10% higher than in pre-war years, yet never in modern times have imported feeding stuffs been so scarce. For the last ten years, research has been in progress and is shortly being reported on, in the endeavour to determine to what extent a dairy farm like that of the Institute, extending to some 135 acres, can be self-sufficient in feeding stuffs. During the last half of the ten-year period during which no imported feeding stuffs were purchased, the average annual milk yield of the herd has approached 20,000 gal., some individual cows giving 1,000 gal. and the average of all the cows and heifers in the last few years being 650–700 gal. Moreover, it has been possible to sell 15–20% of the crops grown on the farm. After allowing for the area devoted to crops which were sold, the yield of milk in the last two years amounted to about 170 gal. per acre.

The economics of these methods of attaining a greater degree of self-sufficiency on the dairy farm, are still being investigated.

Other experiments include investigations on the production of grass and grass protein; and the utilization of grass including grass drying experiments on the nutrition of cattle. A new metabolism house is now being built for nine cows. Experiments on rumen metabolism and on non-fatty solids in milk are being worked out. Although in England a falling off in non-fatty solids has been noticed in recent years, this does not appear to be the case in Scotland.

Further work includes environmental physiology in dairy cattle; the histology of the skin of cattle; the ventilation of byres, etc.

MASTITIS has continued to play a large part; TB., STERILITY and calf diseases are also mentioned. It is stated that in Ayr TB. found in cows slaughtered has been reduced from 40% to 4% since the introduction of the Attested Herds Scheme.—D. S. RABAGLIATI.

CANADA. (1950.) **Province of Alberta. Annual Report of the Department of Agriculture for the year 1949.** [URE, D. A.]—pp. 184. Edmonton: King's Printer. [Report of Director of Veterinary Services pp. 120–137.] **1564**

Erection of a new laboratory at Edmonton has greatly facilitated the work, which appears to be comparable with the British veterinary investigation service. Calfhood vaccination with strain 19 vaccine has proved immensely popular, and BRUCELLOSIS is no longer a problem on farms where the vaccine has been used for several years.—G. B. S. HEATH.

CANADA. (1949.) **Province of Prince Edward Island. Annual Report of the Department of Agriculture for the year ending March 31st, 1949.** [BAKER, C. C.]—pp. 88. Summerside, P.E.I.: Pioneer Publishing Co. [Report of Provincial Animal Pathologist pp. 69–76.] **1565**

Blood testing for pullorum disease of poultry was introduced in 1943; 58,743 birds were tested during 1948–49, and the disease is not now of major importance.—G. B. S. HEATH.

BASUTOLAND. (1950.) **Annual Report of the Department of Agriculture for the year 1949.** —pp. 36. [Items of veterinary interest pp. 14–18.] **1566**

The biennial census taken in early 1949 showed an overall decrease in the number of livestock maintained in the Territory. Even so, and in spite of restrictions on the importation of stock the existing grazing was inadequate. Attempts are being made to control soil erosion by controlled grazing and by systematic reduction of livestock.—S. BRIAN KENDALL.

U.S.A. (1949.) **The costly waste in marketing live stock. 1949 Report of the National Live Stock Loss Prevention Board.** [SMITH, H. R.] —pp. 36. [Mimeographed.] **1567**

It is estimated that preventable losses to the amount of 25 million dollars occur through faulty handling of livestock on rail, ship and lorry, the worst of these being the lorry. Since 1936 there has been a steady annual improvement except for the war years. The U.S. National Livestock Loss Prevention Board endeavours by posters, meetings and the like to reduce the numbers of animals killed and crippled, the amount of bruising, and finally, the losses from preventable disease. It is interesting to note that when in 1950 an Assistant General Manager was appointed a veterinarian was chosen for the post.—R. MACGREGOR.

U.S.A. SOUTH DAKOTA. (1948.) **Sixty-first Annual Station Report July 1, 1947 to June 30, 1948, Agricultural Experiment Station, South Dakota State College of Agriculture and Mechanic Arts, Brookings, S.D.**—pp. 78. [Items of veterinary interest pp. 48–54.] **1568**

Tests on sulphonamide drugs in the control of FOWL CHOLERA (*Pasteurella* infection) show that there is a natural resistance in many birds to infection; that there is a variability in the pathogenicity of the strains of pasteurella organisms; that these drugs are of value in holding the disease in check during an outbreak and also that losses may occur after drug treatment has been discontinued.

Since the first diagnosis of NEWCASTLE DISEASE in South Dakota in the autumn of 1946, it has been positively identified by laboratory tests in 31 flocks in 17 counties.

While no new outbreaks of sporadic BOVINE ENCEPHALITIS occurred during the year, a strain of causative virus isolated in 1947 had been carried through 33 serial passages in embryonated eggs, causing death of the chick embryos in three to eight days.

Work has also been done on the control of helminth parasites in sheep and on the use of anthelmintics in reducing liver condemnations in slaughter lambs.

Animals with a resistance to SELENIUM POISONING have high levels of ascorbic acid in their blood, while the more susceptible animals are unable to maintain the ascorbic acid levels.

To ascertain whether cases of CORNSTALK POISONING may be due to a high concentration of nitrates in the maize plant, considerable data were collected on the composition of maize stalks, especially the non-protein nitrogenous constituents. The effect of feeding nitrate nitrogen to maize seedlings previously depleted of inorganic nitrogenous reserves was studied, and also the question whether nitrate nitrogen in water supplies may be responsible for deaths among cattle.—D. S. RABAGLIATI.

BOOK REVIEWS

CLIFTON, C. E., RAFFEL, S. & BARKER, H. A. [Edited by.] (1950.) **Annual review of microbiology.** Vol. IV. pp. ix+383. Stanford, California: Annual Reviews, Inc. $6.00. **1569**

This volume contains reviews of 18 subjects which cover a wide field, ranging from electron microscopy and antibiotics to aquatic fungi and plant diseases. Of particular interest to veterinarians are the chapters dealing with the newer antibiotics, the genetics of bacteria and viruses, bacterial resistance to chemotherapeutic agents, immunological reactions in virus diseases and the influence of nutrition on experimental infections. Other reviews deal with bacteriophages, the constituents of mycobacteria, bacterial metabolism, tularaemia and human brucellosis.

The periods covered by the reviews vary considerably. That on the genetics of bacteria covers a period of only one year, but most of the others are based on the publications of the last two to ten years. The chapter on the immunology of the human mycoses covers a period of 40 years and is likely to serve as a standard review for some years to come. Each review has a bibliography which includes from 50 to more than 200 references and there is a subject and author index at the end of the volume.

No microbiologist can afford to be without this publication.—E. G. WHITE.

RIMPAU, W. (1950.) Die Leptospirose. Eine kurze Darstellung für Ärzte, Tierärzte und Gesundheitsbehörden. [**Leptospirosis.**] pp. 157. Munich & Berlin: Urban & Schwarzenberg. DM. 10. **1570**

This is Volume 8 of a series of monographs published in association with *Medizinischen Klinik*. It gives a general account of leptospirosis in man and animals, with particular emphasis on infections in man. There are chapters dealing with morphology and biology, cultural identification, serological and inoculation methods, world distribution, clinical symptoms, pathological anatomy, epidemiology and control and prevention. The distribution, pathogenicity and method of transmission of 18 species are given in a table and 13 further species are mentioned.

There is no index and the consideration of leptospirosis in domestic animals is dispersed throughout most of the book, so that the veterinary reader has to search the whole of the text for the information required.

The author states that between 1947 and 1949, 1,300 dogs were examined in Munich (presumably serologically) by Kalich, partly in collaboration with himself. Infection with *L. canicola* was diagnosed in 43% and with *L. icterohaemorrhagiae* in 2%. The mortality was at first 50%, later 30%. Among the positive reactors there were five to six times as many males as females (p. 143).

The author has endeavoured to present the problem of leptospirosis as a whole so that its public health aspects can be clearly seen. Figures are quoted for Germany which suggest that *L. canicola* infection in man and in the dog is widely distributed. The first case in man was recorded in 1937 and in the dog 10 cases were recorded in various cities in 1936. From a questionnaire sent to doctors and veterinarians the author has collected figures for the incidence of infection in man and the dog in Germany since 1940. In the dog the total number of cases is given as 17 up to 1947, rising to 420 during the first four months of 1949. In man there are records of 2 cases before 1947 and 104 in 1948. The figures are based on serological tests (pp. 141–2).—E. G. WHITE.

BAUER, H. R. (1950.) Ferkelverluste. Eine Züchtungshygiene für Tierzüchter und Tierärzte. **[Mortality in young pigs.]** pp. 140. Hanover: M. & H. Schaper. DM. 5. 80. **1571**

This small and unpretentious paper-covered book contains much useful information on the causes of losses in young pigs and methods of preventing them. The author is assistant in the Institute of Veterinary Hygiene in Freiburg im Breisgau and has been closely concerned with all aspects of pig breeding and management for many years and a member of committees dealing with breeding and bacon production.

The book has the sub-title "Pig-breeding hygiene for animal breeders and veterinarians" and covers a wide field, including estimates of mortality, influence of feeding and management, care of the sow and of young pigs, importance of minerals, vitamins and trace elements, inherited abnormalities, bacterial, virus and parasitic diseases, and methods for the improvement of pig breeding in Germany. There are 217 references to published work which are referred to in the text and listed at the end of the book. There is unfortunately no index and there are no illustrations.

The author is concerned with the magnitude of losses among young pigs in Germany and estimates that five million were lost each year at the time of the second world war. The total number of breeding sows in Germany before the war was two million, with an average of 12 piglets *per annum* for each sow (two litters).

Losses within a week or two of birth are put at 25%, with an incidence in some areas as high as 35–70% of all pigs born. Between birth and bacon weight or maturity it is estimated that the average loss is 30–40% of all pigs born. About two thirds of the deaths occur between October and January each year. The causes of these losses are discussed. Herd books for pigs were well established before the war and some 30,000 sows were registered. Among these herds the losses were less than in the pig population as a whole.

Much of the information dealing with nutrition, housing and breeding is well known in Great Britain, but this little book will well repay study by all who are concerned with preventive medicine on the pig farm.—E. G. WHITE.

CUSTER, R. P. [Director of the Presbyterian Hospital in Philadelphia.] (1949.) **An atlas of the blood and bone marrow.** pp. x+321. Philadelphia and London: W. B. Saunders Company. 75/-. **1572**

The use of the word "Atlas" is justified by the large number of illustrations in this book. The photomicrographs and the coloured illustrations are extremely successful; and the very high magnification (in some cases 2,000 times) shows the cytological details with remarkable clarity. These excellent realistic illustrations carry legends sufficiently detailed for the book to be a valuable aid to haematology without recourse to the text. This is as well, for the text falls appreciably below the standard of the illustrations.

The style of writing is deplorable, being colloquial and ugly without the merit of clarity. The use of such terms as "splenogenous" (p. 113) and "imbibition" (p. 121) should be

avoided, and at times the sense is obscured as with "tri-facial neuralgia" (fig. 229; ? nerve pain in three faces). Some space is devoted to a critical study of haematological terminology, yet the term "segmenter" (used in fig. 235) does not appear in the list of terms to be recommended or avoided. Some minor omissions may be noted; for example, a cell is labelled R in fig. 53, but no R appears in the legend. The absence of "megaloblast" from the index is remarkable, and the staining techniques might have been indicated in the legends more frequently.

It is, however, for the illustrations that this book will primarily be used, and these are unsurpassed. The demonstration of the value of marrow sections in diagnosis is particularly important and convincing. The price is very reasonable for such an excellent and informative atlas of haematological illustrations.

—G. FULTON ROBERTS.

BESSIS, M. (1948.) Cytologie sanguine normale et pathologique. **[Cytology of the blood.]** pp. 298. Paris: Masson & Cie. Fr. 1500. **1573**

This book deals with the blood cells of man in health and disease. After introductory chapters concerning general matters of technique and haematopoiesis, a chapter is devoted to each of the following: Stem cells, the erythrocytic series, the granulocyte, monocyte, platelet and lymphocyte. In each instance both normal cells and deviations from the normal are described. In addition the cells of the reticulo-endothelial system are discussed as are the adventitious cells found in smears. The system upon which this book is based places the consideration of the cell before the consideration of the disease.

The book is profusely illustrated. There are 19 coloured plates showing both the normal cells and their major abnormalities. There are numerous photomicrographs and line drawings. The book is well presented, but the binding is not very substantial, being of thin cardboard.

—J. A. J. VENN.

ANON. (1950.) **Symposia of the Society for Experimental Biology. IV. Physiological mechanisms in animal behaviour.** pp. vi+482. Cambridge: The University Press. 35s. **1574**

In this volume are published the 21 papers presented for the symposium of the Society for Experimental Biology at Cambridge in July 1949. It is undoubtedly an important book. Since the papers review the published literature and few of the authors attempt to evade the technical jargon of their subject, the book will be read mainly by research workers; serious students of animal behaviour should, however, make an attempt to grasp the main thesis of each paper, for the ideas presented are stimulating. Each author, besides reviewing the published experiments, presents an account of his own researches.

It might be said that the subjects reviewed bridge the gap between physiology and psychology; the first four papers deal individually with the comparative physiology of the organs of sense and vision and the proprioceptors and the labyrinth. Invertebrate as well as vertebrate forms are discussed; the next five papers are grouped under a main heading "Central and Peripheral Control of Behaviour Patterns", the general thesis of this group being an attempt to explain behaviour in terms of measurable activity of the nervous system. A group of eight papers follows, discussing observations on the behaviour of intact animals and concerns what the layman may be allowed to call their instincts. Psychological investigations are covered by a final group of four papers under the main heading "Learning".—F. B. LEECH.

BATES, M. (1949.) **The natural history of mosquitoes.** pp. xv+379. New York: The Macmillan Co.; London: Macmillan & Co. Ltd.; Toronto: The Macmillan Co. of Canada, Ltd. 25s. 6d. **1575**

The author points out the difficulties encountered in classifying mosquitoes, since absence of certain characteristics, either of structure or behaviour, occurs sporadically. Diurnal and seasonal rhythm, orientation reactions, sexual and food habits, all govern the choice of adult and larval habitat.

The conditions necessary for oviposition, hatching and larval development are described. There is also a discussion on the part played by mosquitoes in the transmission of disease, including a detailed review of the virus diseases known to have mosquito vectors. There is an appendix consisting of a systematic list of mosquito species and a very comprehensive bibliography.—BERYL A. THURSTON.

THOMAS, P. E. L. (1949.) **A guide for authors. Manuscript, proof, and illustration.** pp. viii+85. Springfield, Ill.: Charles C. Thomas; Oxford: Blackwell Scientific Publications, Ltd. $1.–. **1576**

The object of this little monograph by a publisher is "to acquaint all who are called upon to work with manuscript and proof with a definite form of procedure" so that there may be a minimum of delay in publication. The subject has been dealt with systematically and in

detail, in two main parts: Manuscript and Proof, and Illustrations, the latter comprising 38 pages. There is a glossary of technical terms used by printers and publishers and a table of comparative average engraving costs, in U.S. currency.

The book is lithoprinted on good quality paper.—F. E. W.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

ALBERT, A. (1951.) **The acridines. Their preparation, physical, chemical and biological properties and uses.** pp. xiii+381. London: Edward Arnold & Co. 70s.

BAUER, K. H. (1949.) Das Krebsproblem. Einführung in die allgemeine Geschwulstlehre für Studierende, Ärzte und Naturwissenschaftler. **[Introduction to the study of Tumours.]** pp. ix+758. Berlin: Springer-Verlag. DM. 42. –. & DM. 45. 60.

BOLZ, W. (1951.) Lehrbuch der allgemeinen Chirurgie für Tierärzte und Studierende. **[Textbook of general surgery for veterinarians.]** pp. xvi+498. Stuttgart: Ferdinand Enke. 2nd revised Edit. DM. 40. or DM. 43.40.

BOURNE, G. H. [Edited by.] (1951.) **Cytology and cell physiology.** pp. xvi+524. Oxford: The Clarendon Press. 2nd Edit. 50s.

CLIFTON, C. E. (1950.) **Introduction to the bacteria.** pp. xii+528. New York, Toronto & London: McGraw Hill Book Co. Inc. 1st Edit. $5·00. (42s. 6d.)

COTTIER, H. (1950.) Hygiène et médecine vétérinaire à la ferme. **[Farm hygiene and veterinary medicine.]** pp. 516. Paris: Librairie Hachette. Fr. 480.

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